

Vlad Petre Glăveanu
Editor

The Palgrave Encyclopedia of the Possible

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With 157 Figures and 33 Tables

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Vlad Petre Glăveanu
Dublin City University
Dublin, Ireland

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To Emmanuel, for everything he made possible

Preface

The Possible

As human beings, we live in the realm of the possible as much as we do in the here and now of daily experience. We dream, hope, anticipate, and create, continuously exploring new spaces of possibility for ourselves and for others. Our lives are marked by this “amphibious” state, dwelling in the real and the here and now, yet in constant engagement with the sphere of the possible, of what is not (yet) here and what could be (Glăveanu, 2020a). And it is precisely this kind of engagement that helps humans develop society and build complex cultures. The ability to entertain multiple possible outcomes is enabled by our propensity to use signs and symbols and, more generally, to engage with experiences of the world that are distant from what we perceive or what we do in the moment (Valsiner 2014). More than this, we have an unstoppable drive to expand what is possible in our lives and the lives of others. As individuals and as a species, we are keen to contemplate the limits of our possibilities for thought and action and then try to overcome them (Praszkier 2019).

A key concept within philosophy, psychology, and the social sciences at large, the possible designates that area of human experience that lies beyond the present, the sensorial, and the here and now. The possible is not opposed either to the “actual” or the “real” and, in fact, our capacity to engage with what is possible grows out of concrete experiences and ends up transforming them (Vygotsky 2004). It is imperative, thus, to transcend the long-standing dichotomy between the possible and the real. If we follow etymological roots (the Latin *possibilis* “that can be done,” from *posse* “to be able”), we discover this phenomenon is a precondition for human action. Instead of going beyond or contradicting reality, the possible grows out of and enriches our experience of the world by effectively enabling us to act in view of both how the situation is and how it could be (Baumeister et al. 2018). Thus, exploring the possible doesn’t take place outside of or beside our experience of the world: it infiltrates it from the start, infuses it with new meanings, and ends up transforming it altogether. At the same time, the possible should not be reduced to the common-sense notion of what is not certain or what is probable. This would invite a discussion of it mainly in terms of probabilities, counterfactual thinking, and predictions of the future. While a lot of what we refer to as possible belongs to the immediate or distant future, engaging with the possible can be

equally about the past, the elsewhere, the unseen, and the impossible itself (see also Glăveanu 2018).

Another important aspect to note from the start is that possibilities are not always appealing or exciting. Having too many options to choose from can be disorienting (Scheibehenne et al. 2010), innovating in unsustainable ways harmful (Röpke 2012), and spending time in virtual reality can reduce the appetite for in-person encounters (Williams 2007). On the one hand, this quest for actualizing potentialities reveals the best and brightest in human nature and is arguably behind our most creative and innovative achievements. But, on the other, it carries risks and dangers; not everything we imagine as possible should become reality, not all possibilities lead to the common good. In fact, as the state of the world today demonstrates – in environmental, social, economic, and political terms – enacting some potentialities closes the door on other possibilities, expanding the possible for some can mean reducing it for others and, thus, ethical choices need to be made at every turn (Sternberg 2021). Engaging with uncertain outcomes requires these choices be made in the absence of guarantees about the eventual result. In the context of the (post) pandemic world, it becomes imperative to have a sustained reflection about the nature of human possibility, its origins, processes, and consequences. This is the mission of what we currently identify as a “possibilities turn” and the emerging field of Possibility Studies – the rich background for the present encyclopedia.

The Possibilities Turn

The ability to mobilize what is absent in order to enrich the present has been intensively studied within a variety of disciplines across history. These include, but are not reduced to, psychology, philosophy, education, futures studies, sociology, management, business, developmental science, anthropology, politics, design, and the arts. The vocabulary of the possible and the processes assumed to contribute to its cultivation are equally numerous. There is today an expanding field of research on creativity, imagination, innovation, and anticipation, a pervasive interest in counterfactual thinking, as-if thinking and wondering, and, more broadly, in phenomena like hope, agency, and utopia. What drives this concern is both an age-old question about the psychological functions that underpin the development of human forms of culture and civilization and a renewed interest in the power of creativity and imagination to help us solve the numerous, pressing challenges we are faced with as individuals and societies. This interest, and the challenges that trigger it, are both new and old, and a short detour through time can help us understand better where the possible “fits” within this history and what it can bring about.

There is no single scientific account about our humanity, but an ongoing story we create and constantly challenge through multiple paradigmatic turns. For example, the narrative turn of the 1970s and 1980s began in semiology and literary studies and soon after led the ongoing constructionist movement that made social scientists pay closer attention to language, culture, and context (Berger and Luckmann 1989; Bruner 1991). This emphasis on text and

language left many dissatisfied, however, especially those concerned by objects, places, and materials. Socio-materiality emerged in the 1990s and early 2000s as a new paradigm aimed at recognizing the relational nature of our existence, embedded as it is in systems that are, at once, social and material (Latour 2005; Leonardi 2013). After the 2000s, the new mobilities turn responded to yet another perceived limitation of focusing mainly on objects, places, and institutions – their depiction as static or, at least, seemingly static. This latest paradigmatic approach depicts the world in flux and continuous movement (Urry 2016).

Underpinning most of these developments is an interest in possibility, its antecedents, processes, and consequences. The narrative turn brought into sharp focus the potential of language and culture to expand our experience of the here and now. Socio-materiality redefined agency by recognizing objects as actants. Mobilities helped us reflect on how a world in movement is also one that is constantly changing (e.g., Glăveanu 2020b).

There are other fields of research that developed since the 1950s to contribute substantially to our understanding of possibility and its limits. For example, Futures Studies, an area with deep historical roots, emerged as an academic discipline mid 1960s, opening up new spaces for thinking about the future and the processes through which we envision it (Bell 2017), from prediction to forecast and foresight (central topics for a more recent area of inquiry called anticipation studies; Poli 2017). The interest in imagination is centuries old and, during this long time, the importance granted to this process has waxed and waned (Kearney 2002). The past decades “re-discovered” this phenomenon in a variety of disciplines, from philosophy to psychology and neuroscience. Most of all, research into creativity consolidated into a scientific discipline after the 1950s and is today a blooming area of study featuring several dedicated journals and a variety of books, handbooks, and encyclopedias (e.g., Kaufman and Sternberg 2010; Kaufman et al. 2017).

These and other developments mark the start of a “possibilities turn” within the human and social sciences, a turn that is not only announced by increasing levels of research into possibility-related phenomena, but also by the evolution of society in the twenty-first century. From speedy advances in ICT and virtual reality to new technologies that revolutionize transport, medicine, and design, we live in a day and age that opens new horizons of possibility for individuals and societies alike while, at the same time, revealing serious dangers and unintended consequences (from the alarming rise of misinformation on social media to the dramatic consequences of climate change; de Saint-Laurent et al. 2017; Goeminne 2012).

In this societal and scientific context, the area of Possibility Studies concerns itself with the triggers, processes, and outcomes of engaging with the possible at a psychological, material, technological, sociocultural, and political level. It offers, thus, a wide, interdisciplinary umbrella for a series of either well-established or more recent fields of research including creativity, innovation, imagination, wonder, serendipity, pretend play, counterfactual thinking, the future, anticipation, utopias, and social change, among others. The great advantage of placing these domains within a broader “turn” is the fact that research on the possible becomes interdisciplinary by necessity, encouraging

dialogues across the natural and social sciences, the arts and humanities, theoretical and applied fields.

In order to capture this openness and inclusivity, the possible is broadly defined as those features, processes, and events that can come into being and transform what already exists. In other words, beyond the here and now of concrete experience, possibilities designate the elsewhere, the not yet here and the nowhere that, through anticipation, imagination, and creativity, shape how individuals and communities think, feel, and act in the present and build a future. This is not a romanticized understanding of the possible, but a critical reflection on who, how, what, when, where, and why we strive towards possibilities and impossibilities. This ethos substantiates Possibility Studies and its many potentialities.

Possibility Studies

As argued above, Possibility Studies is an emerging, interdisciplinary field of study with a long past but a short history. The theme of human possibility is as old as our reflections about human nature and our place in the world. For centuries, answers to questions related to how we discover and explore possibilities have been offered by philosophers, theologians, and natural scientists. From the nineteenth and twentieth centuries onwards, these interrogations came to be placed mostly at the intersection between the humanities, social sciences, and the arts (but not only, see Olson 2016). Nowadays, calls to take into account themes such as the future, hope, anticipation, creativity, and imagination, among others, are frequent across psychology, sociology, anthropology, and connected disciplines. A paradigm shift is underway in all these fields, built on the background of the multiple emergencies we are faced with, from climate crises to the challenge of “post-truth,” accentuated by the impossibilities brought about by the COVID-19 pandemic.

Briefly defined, Possibility Studies aims to advance our theoretical and practical understanding of how individuals and collectives become aware of and explore new possibilities in the realm of the psychological, material, technological, social, cultural, and political. It brings together research on agency, creativity, innovation, imagination, improvisation, serendipity, wonder, hope, utopias and dystopias, anticipation and Futures Studies, counterfactual thinking, and all other phenomena that focus on our engagement with what is possible (and impossible) in our existence. This kind of research is necessarily interdisciplinary, and one of the main benefits of bringing them together under the umbrella of Possibility Studies rests in the potential for cross-fertilization and, with it, the development of new theories, methodologies, and practices that can help us study and advance human possibility in an age that urgently calls for such an endeavor.

As a large-scale interdisciplinary movement, this area of research brings together scholars and practitioners from a variety of fields that span the social and natural sciences and put them in contact with the arts and humanities. Questions about human nature and possibility have been central to theological and philosophical thinking since their inception. Explorations of what it means

to have agency and be endowed with imagination are inscribed within humanistic thought and currently redefined by post-humanism in the direction of recognizing that materials can also be actants. Psychologists dedicate more and more time to themes like creativity, serendipity, and chance in trying to overcome simple and deterministic models of human behavior. Sociologists and economists bring these interrogations to the level of society and highlight the pressing need to reimagine institutions and economic principles. Entire disciplines have been formed around the theme of the future and its pull, both old (Futures Studies) and new (anticipation studies). Meanwhile, the arts have continuously attempted to open up new spaces of dialogue and possibility when it comes to our understanding of the world and our place within it.

The main challenge facing this growing, diverse community is the lack of systematic opportunities to meet and engage with each other's ideas. While the centrality of the theme of human possibility is recognized across several disciplines (e.g., Appadurai 2013; Gergen 2015; Tavory and Eliasoph 2013), academics are often trapped by disciplinary siloes of concerns and vocabularies that do not communicate effectively with each other. This lack of cross-fertilization restricts progress in fields like creativity which crosses several domains such as psychology, anthropology, design, and philosophy with little transdisciplinary collaboration. For example, psychological research is often based on the study of individuals while the literature on social change is typically focused on macro-social and institutional transformation – theories and findings from both could cross-fertilize in building frameworks of “collective possibility,” but this is a dialogue yet to take place.

We also have, across disciplines, different terms that capture very similar phenomena but tend to do so from particular angles. For instance, constraints are an important notion for innovation and improvisation researchers, but they tend to have a negative connotation in the former (e.g., among innovation management scholars) and positive in the latter (e.g., among anthropologists). However, I believe that it is precisely in the difference of perspectives that understanding can grow. The purpose of creating a space of dialogue on human possibility for experts coming from a variety of fields is not to reach consensus about the topic as this would deny precisely the kinds of differences that are the engine of possibility itself; it is to create opportunities for transdisciplinary collaboration, breakthrough research, and for raising the big questions of Possibility Studies.

The Present Encyclopedia

In this context, the Palgrave Encyclopedia of the Possible aims to examine this central notion and the numerous concepts and themes associated with it today from the standpoint of various disciplines (e.g., psychology, philosophy, sociology, neuroscience, logic, design, ergonomics, entrepreneurship) and multidisciplinary fields of research (e.g., anticipation studies, future studies, complexity theory, creativity research). It adopts multiple perspectives on the possible, from developmental (e.g., considering its emergence in pretend play and games, in the use of symbols and technology) to applied (in domains such

as the arts, architecture, design, and business). It focuses on how we explore the possible (e.g., possibility thinking, wondering, anticipation), as well as how we cultivate it in everyday interactions and within society (e.g., in education, social change, culture). Last but not least, it includes entries that discuss the work of eminent scholars who made important contributions to the areas mentioned above (e.g., Dewey, Lacan, Bakhtin, Winnicott).

The Palgrave Encyclopedia of the Possible offers readers a comprehensive overview of the main concepts and debates within this multifaceted area of research situated at the interface between multiple disciplines and having clear implications for education, business, and society. This book aims to make a significant contribution to our understanding of what the possible is, when it emerges in our everyday life, what kind of processes participate in becoming aware of the possible and exploring it, and, last but not least, what are the consequences of engaging with the possible for our individual and collective existence. It provides conceptual, methodological, and practical tools for all those interested in studying possibility and cultivating it through education and within society.

While studies of the possible do not represent a unitary and homogenous field, it is both important and timely to gather and systematize the vocabulary of this emerging, multidisciplinary area of research within an Encyclopedia. My hope is that this project will not only give researchers interested in Possibility Studies access to a key resource for their work, but it will also bring together and consolidate a community of scholars focused on how we explore, mobilize, and foster the possible within a variety of theoretical, research, and applied contexts. It stands as an open invitation to co-construct the field and its future.

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Vlad P. Glăveanu
Editor

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About the Editor



Vlad P. Glăveanu PhD, is Full Professor of psychology in the School of Psychology, Dublin City University, and Professor II at the Centre for the Science of Learning and Technology, University of Bergen. He is the founder and president of the Possibility Studies Network (PSN). His work focuses on creativity, imagination, culture, collaboration, wonder, possibility, and societal challenges. He edited the *Palgrave Handbook of Creativity and Culture* (2016) and the *Oxford Creativity Reader* (2018); co-edited the *Cambridge Handbook of Creativity Across Domains* (2017) and the *Oxford Handbook of Imagination and Culture* (2017); authored *The Possible: A Sociocultural Theory* (Oxford University Press, 2020), *Creativity: A Very Short Introduction* (Oxford University Press, 2021), and *Wonder: The Extraordinary Power of an Ordinary Experience* (Bloomsbury, 2020); and authored or co-authored more than 200 articles and book chapters in these areas. Dr. Glăveanu co-edits the book series Palgrave Studies in Creativity and Culture with Palgrave and the Cambridge Series on Possibility Studies with Cambridge University Press. He is editor of *Europe's Journal of Psychology* (EJOP), an open-access peer-reviewed journal published by PsychOpen (Germany) as well as *Possibility Studies and Society*, launched by Sage in 2022. In 2018, he received the Berlyne Award from the APA Division 10 for outstanding early career contributions to the field of aesthetics, creativity, and the arts.

Section Editors

Sergio Agnoli Department of Life Sciences, University of Trieste, Trieste, Italy

Ross Anderson Creative Engagement Lab, LLC, Principal Investigator, Eugene, OR, USA

Samira Bourgeois-Bougrine Université Paris Cité and Univ Gustave Eiffel, LaPEA, Boulogne-Billancourt, France

Martina Cabra Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

Alice Chirico Department of Psychology, Università Cattolica del Sacro Cuore di Milano, Milan, Italy

Gabriel Fortes Department of Psychology, Universidad Alberto Hurtado, Santiago, Chile

Vlad P. Glăveanu School of Psychology, Dublin City University, Dublin, Ireland

Centre for the Science of Learning and Technology, University of Bergen, Bergen, Norway

Hana Hawlina Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

Izabela Lebuda Institute of Psychology, University of Wrocław, Wrocław, Poland

Serena Mastria Department of Psychology, Alma Mater Studiorum – University of Bologna, Bologna, Italy

Ingunn Johanne Ness University of Bergen, Faculty of Psychology, the Centre for the Science of Learning and Technology (SLATE), Bergen, Norway

Cathy Nicholson Department of Psychological and Behavioural Science, London School of Economics, London, UK

Richard Randell Department of Psychology and Counselling, Webster University, Geneva, Switzerland

Wendy Ross Department of Psychology, London Metropolitan University, London, UK

Ramiro Tau Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland

With contributions from:

Jakob Villadsen University of Copenhagen, Copenhagen, Denmark

Contributors

Sergio Agnoli Marconi Institute for Creativity, University of Bologna, Sasso Marconi, Italy

Sanaa Ahmed Department of Psychology, University of Nebraska at Omaha, Omaha, NE, USA

Niccolò Aimo University of Milano-Bicocca, Milan, Italy

Laurice Alexandre CEPED, Université de Paris, Paris, France

Alessandra Aloisi University of Oxford, Oxford, UK

Gianmarco Altoè Department of Developmental and Social Psychology, University of Padova, Padova, Italy

Ximena Amariles Gender, Subjectivity and Society Research Group, Faculty of Social and Human Sciences; Unipluriversidad Research Group, Faculty of Education, University of Antioquia, Medellin, Colombia

Ximena Amariles-González Universidad de Antioquia, Antioquia, Colombia

Ross C. Anderson University of Oregon, Eugene, OR, USA
Creative Engagement Lab, Eugene, OR, USA

Alessandro Antonietti Department of Psychology, Catholic University of the Sacred Heart, Milan, Italy

Francesco Arese Visconti Webster University Geneva, Geneva, Switzerland

Selene Arfini University of Pavia, Pavia, Italy

Lionel Artige University of Liège, Liège, Belgium

Sarah H. Awad Aalborg University, Aalborg, Denmark

Maximiliano Azcona Universidad Nacional de La Plata, La Plata, Argentina

Leonie Baldacchino The Edward de Bono Institute for Creative Thinking and Innovation, University of Malta, Msida, Malta

Alice Barale Università degli Studi di Milano, Milan, Italy

Baptiste Barbot Université Catholique de Louvain, Ottignies-Louvain-la-Neuve, Belgium

Child Study Center, Yale University, New Haven, CT, USA

Teodolinda Barolini Columbia University, New York, NY, USA

Louise Barrett University of Lethbridge, Lethbridge, AB, Canada

Martin W. Bauer Department of Psychological and Behavioural Science, London School of Economics and Political Science, London, UK

Roy F. Baumeister University of Queensland, Brisbane, QLD, Australia
Florida State University, Tallahassee, FL, USA

Ronald A. Beghetto Mary Lou Fulton Teachers College, Arizona State University, Tempe, AZ, USA

Bernard D. Beitman Department of Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA, USA

Ilaria Maria Antonietta Benzi Applied Technology for Neuro-Psychology Lab, IRCCS Istituto Auxologico Italiano, Milan, Italy

Michał Bialek University of Wrocław, Wrocław, Poland

Lennart Björneborn Department of Communication, University of Copenhagen, Copenhagen, Denmark

Nathalie Bonnardel Aix-Marseille Univ., PSYCLE (UR 3273) & InCIAM, Aix-en-Provence, France

Béatrice Boulu-Reshef University of Orléans, Laboratoire d'Economie d'Orléans, Orléans, France

Samira Bourgeois-Bougrine Université de Paris, Paris, France

Guy André Boy CentraleSupélec, Paris Saclay University, Gif-sur-Yvette, France

ESTIA Institute of Technology, Bidart, France

Angela Uchoa Branco Institute of Psychology, University of Brasília, Brasília, Brazil

Robert Braun Institute for Advanced Studies (IHS), Vienna, Austria

Ignacio Brescó de Luna Aalborg University, Aalborg, Denmark

Henry Brighton Department of Cognitive Science and Artificial Intelligence, Tilburg University, Tilburg, The Netherlands

Maria Regina Brioschi Department of Philosophy, University of Milan, Milan, Italy

Steven D. Brown Nottingham Trent University, Nottingham, UK

Stéphanie Buisine CESI, Nanterre, France

Martina Cabra Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

Antonio Calcagni Department of Developmental and Social Psychology, University of Padova, Padova, Italy

Hader Calderón-Serna Research Group Unipluriversidad, Universidad de Antioquia, Medellín, Colombia

Laura Caravona University of Milano-Bicocca, Milan, Italy

Sonia Cárdenas-Solís Instituto de Sociología y Estudios Campesinos, Universidad de Córdoba, Córdoba, España

Kevin R. Carriere Washington & Jefferson College, Washington, PA, USA

José Antonio Castorina Universidad Pedagógica Nacional, Universidad de Buenos Aires, CONICET (Consejo Nacional de Investigaciones Científicas y Tecnológicas), Buenos Aires, Argentina

Tícia Cassiany Ferro Cavalcante Federal University of Pernambuco, Recife, Brazil

Claude Chaudet Webster University, Geneva, Switzerland

Tatiana Chemi Aalborg University, Aalborg, Denmark

Alice Chirico Department of Psychology, Università Cattolica del Sacro Cuore, Milan, Italy

Alexander P. Christensen University of North Carolina at Greensboro, Greensboro, NC, USA

James Clack University of Bedfordshire, Bedford, UK

Edward P. Clapp Project Zero, Harvard Graduate School of Education, Cambridge, MA, USA

Cory J. Clark University of Pennsylvania, Philadelphia, PA, USA

Robert R. Clewis Gwynedd Mercy University, Gwynedd Valley, PA, USA

David Coghlan Trinity Business School, University of Dublin Trinity College, Dublin, Ireland

Kaija Collin Department of Education, University of Jyväskylä, Jyväskylä, Finland

Samantha Copeland Ethics and Philosophy of Technology section, Department of Values, Technology and Innovation, Faculty of Technology Policy and Management, Delft University of Technology, Delft, The Netherlands

Giovanni Emanuele Corazza DEI-Marconi Institute for Creativity, University of Bologna, Bologna, Italy

LAPEA, Université de Paris, Boulogne-Billancourt, France

LAPEA, IFSTTAR, University Gustave Eiffel, Versailles, France

Jack S. Crumley II Department of Philosophy, University of San Diego, San Diego, CA, USA

Veronica Cucchiari University of Milano-Bicocca, Milan, Italy

João R. R. Tenório da Silva Universidade Federal de Pernambuco, Caruaru, PE, Brazil

Alejandro Dagfal Facultad de Psicología, University of Buenos Aires, Consejo Nacional de Investigaciones Científicas y Técnicas, Biblioteca Nacional, Buenos Aires, Argentina

Orin C. Davis Quality of Life Laboratory, New York, NY, USA
New York University, New York, NY, USA

Michael De Department of Philosophy, Utrecht University, Utrecht, The Netherlands

Maria Izabel Siqueira de Andrade Universidade Federal de Alagoas, Maceió, Brazil

João Paulo Maciel de Araujo Federal University of Pernambuco, Recife, Brazil

Leandro De Brasi Universidad de La Frontera, Temuco, Chile

Felipe De Brigard Duke University, Durham, NC, USA

Sylvia De Chiaro Federal University of Pernambuco, Recife, Brazil

Carolina De La Torre Ugarte Geneva, Switzerland

Patrícia Fortes Cavalcanti de Macêdo Universidade Federal da Bahia, Salvador, Brazil

Luis de Miranda Uppsala University, Uppsala, Sweden

Mônica Leila Portela de Santana Universidade Federal da Bahia, Salvador, Brazil

Henderika (Herie) de Vries Yale University, New Haven, CT, USA

Mirko Demasi Leeds Beckett University, Leeds, UK

Daniele Di Lernia Catholic University of the Sacred Heart of Milan, Milan, Italy

Stephan Dickert Department of Psychology, University of Klagenfurt, Klagenfurt, Austria

Department of Marketing, Queen Mary University of London, London, UK

Artur Domurat Kozminski University, Warsaw, Poland

Anna Dorfman Department of Psychology, University of Waterloo, Waterloo, Canada

John Drury School of Psychology, University of Sussex, Brighton, UK

Didier Dubois IRIT, CNRS, Université Paul Sabatier, Toulouse, France

Stephen Duncombe New York University, New York, NY, USA

Kjetil Egeland Centre for the Science of Learning & Technology (SLATE), University of Bergen, Bergen, Norway

Kristen G. Fickes Emory H. Markle Middle School, South Western School District, Hanover, PA, USA

Gabriel Fortes Department of Psychology, Universidad Alberto Hurtado, Santiago, Chile

Laura Franchin Department of Psychology and Cognitive Sciences, University of Trento, Trento, Italy

Mark Freeman College of the Holy Cross, Worcester, MA, USA

Andrea Gaggioli Department of Psychology, Università Cattolica del Sacro Cuore, Milan, Italy

Applied Technology for Neuro-Psychology Lab, I.R.C.C.S. Istituto Auxologico Italiano, Milan, Italy

Arran Gare Philosophy and Cultural Inquiry, Swinburne University, Melbourne, VIC, Australia

Rocky Garrison Adler Graduate School, Minneapolis, MN, USA

Xin Ge School of Business, University of Northern British Columbia, Prince George, Canada

Neil German Webster University, Geneva, Switzerland

John Gero University of North Carolina, Charlotte, NC, USA

Alex T. Gillespie Department of Psychological and Behavioural Science, London School of Economics and Political sciences, London, UK

Katrina Ginis Monash University, Melbourne, VIC, Australia

Vlad P. Glăveanu School of Psychology, Dublin City University, Dublin, Ireland

Centre for the Science of Learning and Technology (SLATE), University of Bergen, Bergen, Norway

Ingrid González-Palta Universidad Alberto Hurtado, Santiago, Chile

Dan Goodley iHuman, University of Sheffield, Sheffield, UK

Sara Greco Università della Svizzera italiana (USI), Lugano, Switzerland

Elena L. Grigorenko University of Houston & Baylor College of Medicine, Houston, TX, USA

Igor Grossmann Department of Psychology, University of Waterloo, Waterloo, Canada

Sarah Grosso Webster University Geneva, Geneva, Switzerland

Jérôme Guegan University de Paris, Paris, France

Valentina Fernández Guzmán Universidad Alberto Hurtado, Santiago, Chile

David Hamon Friedrich-Alexander University Erlangen-Nürnberg, Erlangen, Germany

Michael Hanchett Hanson Teachers College, Columbia University, New York City, NY, USA

Silas Harrebye Roskilde University, Roskilde, Denmark

Hana Hawlina Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

Brett Heasman Centre for Research in Autism and Education (CRAE), UCL, London, UK

Sonja Heintz University of Zurich, Zurich, Switzerland

Linda Hendriks Hanze University of Applied Sciences, Groningen, The Netherlands

Hubert J. M. Hermans Radboud University of Nijmegen, Nijmegen, The Netherlands

Bridgid Hess Psychology, Webster University Geneva, Geneva, Switzerland

Carolyn Kar Ning Ho Canadian International School of Hong Kong, Hong Kong, China

Jennifer Hofmann University of Zurich, Zurich, Switzerland

Ilhan Inan Philosophy, Koç University, Istanbul, Turkey

Robert E. Innis Department of Philosophy, University of Massachusetts Lowell, Lowell, MA, USA

Nicoletta Isar University of Copenhagen, Copenhagen, Denmark

Lukasz Dominik Kaczmarek Department of Psychology and Cognitive Science, Adam Mickiewicz University in Poznan, Poznan, Poland

Mane Kara-Yakoubian Department of Psychology, Ryerson University, Toronto, Ontario, Canada

Pedro Karczmarczyk National University of La Plata/ National Council of Scientific and Technological Research (CONICET), La Plata, Argentina

Maciej Karwowski Institute of Psychology, University of Wrocław, Wrocław, Poland

James C. Kaufman Neag School of Education, University of Connecticut, Storrs, CT, USA

Barry Klarman International Center for Studies in Creativity, The State University of New York, Buffalo, NY, USA

Nauja Kleist Danish Institute for International Studies, Copenhagen, Denmark

Leonie Kronborg Monash University, Melbourne, VIC, Australia

Elisa Kupers University of Groningen, Groningen, The Netherlands

Jack M. C. Kwong Department of Philosophy and Religion, Appalachian State University, Boone, NC, USA

Maria Laakso Tampere University, Tampere, Finland

Paulina Larocca University of Technology Sydney, Ultimo, Australia

Antonia Sutil Larrain Universidad Alberto Hurtado, Santiago, Chile

Stephan Lau Hochschule des Bundes für öffentliche Verwaltung, Berlin, Germany

Bem Le Hunte TD School, University of Technology Sydney, Sydney, NSW, Australia

Olga V. Lehmann NIEFT – The Norwegian Institute for Emotion Focused Therapy / NTNU – Norwegian University of Science and Technology, Bergen, Norway

Soila Lemmetty Department of Education, University of Jyväskylä, Jyväskylä, Finland

Emily LeRoux-Rutledge University of the West of England, Bristol, UK

Kayne Lim University of Queensland, Brisbane, QLD, Australia

Yu-sien Lin Department of Education, Chinese Culture University, Taipei, Taiwan

Lisa Lipinski Columbian College of Arts and Sciences, George Washington University, Washington, DC, USA

Flora Lisica Northeastern University London, London, UK

Victor Loughlin Centre for Philosophical Psychology, Department of Philosophy, University of Antwerp, Antwerp, Belgium

Craig Lundy London Metropolitan University, London, UK

Wolfram Lutterer Central and University Library, Lucerne, Switzerland

Steven Lybrand Palo Alto, CA, USA

Maria C. D. P. Lyra Federal University of Pernambuco, Recife, Brazil

Laura Macchi University of Milano-Bicocca, Milan, Italy

Virgínia Campos Machado Universidade Federal da Bahia, Salvador, Brazil

José Hugo Gonçalves Magalhães University of Pernambuco, Petrolina, Brazil

Fiona Maine University of Cambridge, Cambridge, UK

Margaret Mangion The Edward de Bono Institute for Creative Thinking and Innovation, University of Malta, Msida, Malta

Gabriela Manley University of St Andrews, St Andrews, UK

Erik Mansager Webster University, Geneva, Switzerland

Heather M. Maranges Wake Forest University, Winston-Salem, NC, USA

Giuseppina Marsico University of Salerno, Fisciano, Italy
Federal University of Bahia, Salvador, Brazil

Eduardo Martí Facultat de Psicologia, Universitat de Barcelona, Barcelona, Spain

Jack Martin Department of Psychology, Simon Fraser University, Burnaby, BC, Canada

Serena Mastria Department of Electrical, Electronic, and Information Engineering “Guglielmo Marconi”, University of Bologna, Bologna, Italy
Marconi Institute for Creativity (MIC), Villa Griffone, Sasso Marconi, Italy

Eugene Matusov School of Education, University of Delaware, Newark, DE, USA

Sabrina Mazzali-Lurati Università della Svizzera italiana (USI), Lugano, Switzerland

Maddalena Mazzocut-Mis Università degli Studi, Milan, Italy

Marquis’ Branddon McGee The Soundsmith Guild, Geneva, Switzerland

Rafeeq O. McGiveron Lansing Community College, Lansing, MI, USA

Margaret McVeigh Griffith Film School, Griffith University, Brisbane, QLD, Australia

Yeison Meneses-Copete Université de Perpignan, Perpignan, France

Paul R. Messinger Alberta School of Business, University of Alberta, Edmonton, Canada

Ethan A. Meyers University of Waterloo, Waterloo, ON, Canada

Mike Michael Department of Sociology, Philosophy and Anthropology, University of Exeter, Exeter, UK

Kourken Michaelian Centre for Philosophy of Memory, Université Grenoble Alpes, Grenoble, France

Institut de Philosophie de Grenoble, Université Grenoble Alpes, Grenoble, France

Institut Universitaire de France, Paris, France

Alberto Milesi Università degli Studi di Milano-Bicocca, Milan, Italy

Alfonso Montuori California Institute of Integral Studies, San Francisco, CA, USA

María Eugenia Morales Universidad de Antioquia, Antioquia, Colombia

Daphna Motro Frank G. Zarb School of Business, Hofstra University, Hempstead, NY, USA

Victor Vahidi Motti Alternative Planetary Futures Institute (ApFi), Washington, DC, USA

Cristiano B. Moura Centro Federal de Educação Tecnológica Celso Suckow da Fonseca, Rio de Janeiro, RJ, Brazil

Masoud Movahed Department of Sociology, University of Wisconsin-Madison, Madison, WI, USA

Paige Munnik School of Psychology, University of Buckingham, Buckingham, UK

Vignesh R. Murugavel University of Nebraska at Omaha, Omaha, USA

Nathalie Nader-Grosbois Université Catholique de Louvain, Ottignies-Louvain-la-Neuve, Belgium

Ingunn Johanne Ness Faculty of Psychology, Centre for the Science of Learning and Technology (SLATE), University of Bergen, Bergen, Norway

M. S. Neves-Pereira Universidade de Brasília – UnB, Brasília-DF, Brazil

James Nguyen Department of Philosophy, Stockholm University, Stockholm, Sweden

Institute of Philosophy, University of London, London, UK

Centre for Philosophy of Natural and Social Science, London School of Economics and Political Science, London, UK

Dirk Niefanger Friedrich-Alexander University Erlangen-Nürnberg, Erlangen, Germany

Sandra Obradović School of Psychology and Counselling, The Open University, Milton Keynes, UK

Laura Antonia Lucia Parolin Università degli Studi di Milano-Bicocca, Milan, Italy

Massimiliano Pastore Department of Developmental and Social Psychology, University of Padova, Padova, Italy

Anne-Nelly Perret-Clermont University of Neuchâtel, Neuchâtel, Switzerland

Denis Perrin Centre for Philosophy of Memory, Université Grenoble Alpes, Grenoble, France

Institut de Philosophie de Grenoble, Université Grenoble Alpes, Grenoble, France

Connie Phelps Emporia State University, Emporia, KS, USA

Marina Assis Pinheiro Universidade Federal de Pernambuco-UFPE, Recife, PE, Brazil

Baingio Pinna Department of Biomedical Sciences, University of Sassari, Sassari, Italy

Andrea Pittarello Psychology Department, Virginia Tech, Blacksburg, VA, USA

Jonathan A. Plucker Center for Talented Youth and School of Education, Johns Hopkins University, Baltimore, MD, USA

Roberto Poli Department of Sociology and Social Research, University of Trento, Trento, Italy

Hernán Porras-Gallego Corporación CEAM, Marinilla, Colombia

Wendy Powell Department of Cognitive Science and Artificial Intelligence, Tilburg University, Tilburg, The Netherlands

Séamus A. Power University of Copenhagen, Copenhagen, Denmark

Henri Prade IRIT, CNRS, Université Paul Sabatier, Toulouse, France

Ryszard Praszquier Institute for Social Studies, Emeritus, University of Warsaw, Warszawa, Poland

David D. Preiss Pontificia Universidad Católica de Chile, Santiago, Chile

Jean E. Pretz Elizabethtown College, Elizabethtown, PA, USA

Gerard J. Puccio International Center for Studies in Creativity, The State University of New York, Buffalo, NY, USA

Richard Randell Webster University Geneva, Geneva, Switzerland

Ludvig Johan Torp Rasmussen Department of Health Science and Technology, Aalborg University, Aalborg, Denmark

Sally M. Reis Neag School of Education, University of Connecticut, Storrs, CT, USA

Roni Reiter-Palmon Department of Psychology, University of Nebraska at Omaha, Omaha, NE, USA

Joseph S. Renzulli Neag School of Education, University of Connecticut, Storrs, CT, USA

Rick Repetti Kingsborough Community College of the City University of New York (CUNY), Brooklyn, NY, USA

Nicholas Rescher Department of Philosophy, University of Pittsburgh, Pittsburgh, PA, USA

Giuseppe Riva Applied Technology for Neuro-Psychology Lab, IRCCS Istituto Auxologico Italiano, Milan, Italy

Department of Psychology, Università Cattolica del Sacro Cuore, Largo Gemelli, Milan, Italy

Laura Røgild-Müller IBEF Scholar and Centre of Cultural Psychology, Aalborg University, Aalborg, Denmark

Wendy Ross Department of Psychology, London Metropolitan University, Kingston upon London, UK

Amanda Rotella Department of Psychology, Kingston University, Kingston-upon-Thames, UK

Duane Rousselle Sociology and Psychoanalysis, The School of Advanced Studies, University of Tyumen, Ontario, Canada

Enrico Rubaltelli Department of Developmental Psychology and Socialization, University of Padova, Padova, Italy

Mark A. Runco Southern Oregon University, Ashland, OR, USA

Sandra W. Russ Department of Psychological Sciences, Case Western Reserve University, Cleveland, OH, USA

Patricio Saavedra Institute of Social Sciences, University of O'Higgins, Rancagua, Chile

Betty Sacco German C.G. Jung Institut, Zurich, Switzerland
Webster University, Geneva, Switzerland

Guilherme Sanches de Oliveira Department of Biological Psychology and Neuroergonomics, Technische Universität Berlin, Berlin, Germany

Julianna Sandholm-Bark Webster University Geneva, Geneva, Switzerland

André Sant'Anna Centre for Philosophy of Memory, Université Grenoble Alpes, Grenoble, France

Department of Philosophy, Washington University in St. Louis, St. Louis, MO, USA

Philosophy-Neuroscience-Psychology Programme, Washington University in St. Louis, St. Louis, MO, USA

Gil Santos Departamento de História e Filosofia das Ciências and Centro de Filosofia das Ciências da Universidade de Lisboa, Faculdade de Ciências, Universidade de Lisboa, Lisboa, Portugal

César Schirmer dos Santos MemLab-UFSM, Universidade Federal de Santa Maria, Santa Maria, Brazil

Department of Philosophy, Universidade Federal de Santa Maria, Santa Maria, Brazil

Joel T. Schmidt Institute for Creativity and Innovation, Hochschule für angewandtes Management GmbH, Ismaning, Germany

François Schmitz Université de Nantes, Nantes, France

Rocco Scolozzi Department of Sociology and Social Research, University of Trento, Trento, Italy

Department of Civil, Environmental and Mechanical Engineering, University of Trento, Trento, Italy

Skopia S.R.L. Anticipation Services, Trento, Italy

Zayda Sierra Unipluriversidad Research Group, Faculty of Education, University of Antioquia, Medellín, Colombia

Livia Mathias Simão Universidade de São Paulo-USP, São Paulo, SP, Brazil

Poline Simon Université Catholique de Louvain, Ottignies-Louvain-la-Neuve, Belgium

Dean Keith Simonton Department of Psychology, University of California, Davis, CA, USA

Hallgeir Sjøstad Norwegian School of Economics, Bergen, Norway

Ineke Sluiter Department of Classics, Faculty of Humanities, Leiden University, Leiden, The Netherlands

Kristen Smirnov Department of Business Administration, Whittier College, Whittier, CA, U.S.A.

Sam Smith Department of Social Sciences, Oxford Brookes University, Oxford, UK

Paul Stenner School of Psychology and Counselling, The Open University, Milton Keynes, UK

Robert J. Sternberg Department of Human Development, College of Human Ecology, Cornell University, Ithaca, NY, USA

Sandra Stewart Monash University, Melbourne, VIC, Australia

Anete Mikkala Camille Strand Department of Communication and Psychology, Aalborg University, Aalborg, Denmark

Michael T. Stuart Department of Philosophy, University of Geneva, Geneva, Switzerland

Pamela A. Szalay International Center for Studies in Creativity, The State University of New York, Buffalo, NY, USA

Magda Szarota Lancaster University, Lancaster, UK

Mariusz Tabaczek Pontifical University of Saint Thomas Aquinas, Rome, Italy

Thomistic Institute, Warsaw, Poland

Antoine Taillard Institute of Philosophy, University of Neuchâtel, Neuchâtel, Switzerland

Ramiro Tau Faculty of Psychology and Educational Sciences, Université de Genève, Genève, Switzerland

Ian Thompson Department of Education, University of Oxford, Oxford, UK

Marion Trousselard Institute of Biomedical Research, French Ministry of Armed Forces, Bretigny sur Orge, France

APEMAC/EPSAM, EA 4360, Ile du Saulcy, Metz, Cedex, France

Martina Vacondio Department of Psychology, University of Klagenfurt, Klagenfurt, Austria

Tatiana A. M. Valério Federal Institute of Pernambuco, Belo Jardim, Brazil

Frédéric Vallée-Tourangeau Department of Psychology, Kingston University, Kingston-upon-Thames, UK

Gaëlle Vallée-Tourangeau Department of Management, Kingston University, Kingston-upon-Thames, UK

Jaan Valsiner Aalborg University, Aalborg, Denmark

Jef J. J. van den Hout The Hague University of Applied Sciences, Research Group Sustainable Talent Development, The Hague, The Netherlands

Flow Concepts, Tilburg, The Netherlands

Luk Van Langenhove Vrije Universiteit Brussels, Brussels, Belgium

Oshin Vartanian University of Toronto, Toronto, ON, Canada

Miguel John Versluys Department of Classical and Mediterranean Archaeology, Faculty of Archaeology, Leiden University, Leiden, The Netherlands

J. E. Vistic BIMM Institute, Brighton, UK

Julia Petra Ariane von Thienen Hasso Plattner Institute for Digital Engineering, University of Potsdam, Potsdam, Germany

Brady Wagoner Department of Communication and Psychology, Centre for Cultural Psychology, Aalborg University, Aalborg, Denmark

Bjørknes Høyskole, Oslo, Norway

Margaret Webb University of Melbourne, Melbourne, VIC, Australia

Rupert Wegerif University of Cambridge, Cambridge, UK

Christian H. Werner Institute for Creativity and Innovation, Hochschule für angewandtes Management GmbH, Ismaning, Germany

Alex Wilkie Department of Design, Goldsmiths, University of London, London, UK

Agnieszka Wołowicz University of Warsaw, Warsaw, Poland

Kiene Brillenburg Wurth Comparative Literature, Utrecht University, Utrecht, The Netherlands

Aleksandra Zielińska Institute of Psychology, University of Wrocław, Wrocław, Poland

Tania Zittoun Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

A

Abduction

Gabriel Fortes

Department of Psychology, Universidad Alberto Hurtado, Santiago, Chile

Abstract

In general, Abduction refers to a logical operation of explanatory reasoning out of a specific set of premises, both discovery and hypothesis formulation. Abduction has also been referred to as various reasoning processes, such as hypothetical thinking, imagination, intuition, and guessing. Despite its variety of definitions, the leading intellectual reference for this entry is Charles Sanders Peirce (1839–1914), logician and American philosopher, who first developed abductive reasoning ideas. We aim to understand what Abduction refers to and its impact on human knowledge construction, especially how it conceptualizes that humans are “made for” dealing with the possible. In this sense, an Abduction is a human form of coping with plausible possibilities and not with certainty or probability in logical terms. We will point out how to use the idea of Abduction in different ways and how it supports different ways of dealing “rationally” with the possible (be it as uncertainty, prediction, novelty, guessing, or intuition). We will discuss how this inclination toward dealing with uncertainty is not a process of truth-seeking but

exploring possible worlds within the available information for each one in a given context (Ribeiro et al., Uncertainty in decision-making: an abductive perspective. *Decision Support Systems* 13(2):183–193, 1995). This type of reasoning has been explored in logics and scientific discovery, in learning contexts, and in ordinary life, to mention a few. With all of the above mentioned, we should understand Abduction as a critical process of human grasping of the possible.

Keywords

Abduction · Abductive Reasoning · Surprise · Charles S. Peirce

Introduction

Before we begin with Abduction, we must first understand why it is considered different reasoning compared to deduction (drawing a true conclusion from valid premises) and induction (inferring a probable conclusion from available information). Charles Sanders Peirce first noticed that deduction and induction were not sufficient logical procedures (Peirce, CP 1.559, 1867) to account for how one makes inferences in the context of insufficient information available. (We will use the standard notation for Peirce’s work, *Collected Papers* (1931–1958), by volume and paragraph number. References to “MS” are to

Peirce's Manuscripts (1963–1966) by paragraph number.) In his work, deduction refers to the logical operation of deriving necessary conclusions from given premises, induction refers to the procedure of inferring general rules from multiple observations, and Abduction refers to generating a hypothesis given a context of insufficient information or uncertainty. Following Peirce, Thagard (2007) proposes the following notation for Abduction: q , if p then q , so maybe p . Peirce named this process of thinking through “maybes” differently throughout his work, as Abduction, retrodution, hypothesis, or hypothetical inference (Bergman and Paavola 2003; El Khachab 2013), but the consensus is that Abduction refers to a reasoning procedure of inferring plausible explanation from surprising observations.

One of Peirce's main idea on Abduction is that one cannot achieve novel knowledge without a mechanism of hypothesis formation; it is only through “maybes” that we grasp for novelty. In other words, Abduction is a mode of reasoning responsible for the generation of momentary truths. In our interpretation, Abduction is a vital part of how the possible unfolds through human reasoning.

The Development of Abduction

There are at least two phases of Peirce's ideas on Abduction (and its many forms) accepted in literature. It is common to distinguish between an early (1860–1890) and late (1890–1910) Peirce (Paavola 2006; El Khachab 2013). Although both deal with Abduction under the basis of logical and psychological investigation of inference, they differ significantly on width and application to the idea of the possible.

In his earlier works, Peirce emphasized establishing the logical grounds for this new mode of reasoning. Drawing from the logical procedure of syllogistic reasoning, he proposed that Abduction is the inference of causes from effects in the best possible explanation. While deductions produce true knowledge and induction produces probable knowledge, Peirce revealed that we have grounds to warrant a

mode of reasoning of plausible knowledge, which is a revolutionary idea if we want to understand how new ideas arise from existing knowledge. In Peirce's understanding, no one can construct new knowledge under validity or probability modes of inference.

Despite the emphases on logical grounds of Abduction, Peirce's later work dives more in-depth into Abduction than his first stage of inquiry or discovery (El Khachab 2013; Hintikka 1998). Although not abandoning his tendencies of pursuing logical soundness, what seems to be at stake in this phase is how Abduction is the foundation of human reasoning. Even though he says that Abduction (or hypothesis) is a weaker form of inference, it serves as the mechanism in generating new ideas. For him, Abduction is the process by which we formulate momentary good reasons to adopt a new hypothesis that then should be tested later through induction (Hintikka 1998; Walton 2014). In this sense, he takes Abduction as the tendency of finding an explanation for puzzling or surprising information, as he formulates the following:

1. The surprising fact, C , is observed.
2. But if A were true, C would be a matter of course.
3. Hence, there is a reason to suspect that A is true. (Peirce, CP 5.189, 1903).

Peirce takes it seriously when stating that Abduction seems to be a tendency of the human mind to deal with puzzlement. He further states that the process of guessing is not only logical but instinctual (Santaella 1991; Tschaepé 2014). By instinct, he means the capacity for guessing without the need for deliberative reasoning. For Santaella (2005), this idea is both revolutionary and controversial because it states that humankind has a natural tendency (even unconscious) for correctly guessing what, many times, excels our conscious effort of deliberative reasoning.

For Philosophy and Psychology, this means that neither empiricist nor rationalist understanding of human cognition is complete. Moreover, it means that new knowledge depends upon processes often uncontrolled by a rational

mind, however, still grounded on logical processes. Although Peirce's first ideas are interesting for the discussion of the possible, we find this second version even more critical because this idea of Abduction operationalizes how we imagine, amplify, and create our possible within the realms of rational tendencies of dealing with uncertainty.

This instinctive and natural capacity for generating possible explanations should not be taken as a "truth-seeking" mechanism but as a creative (and innovative) reaction to surprise and puzzlement (Paavola 2005). Peirce's work often interconnects words such as surprise, puzzle, curiosity, guessing, or discovery with the idea of the abductive process of inference. In our interpretation, especially when thinking about the possible, Peirce is more interested in abductive reasoning products in his first phase. Even when he uses the term "inference process," knowing its results (rules, facts, and cases) is at stake. His second phase, more interesting for us, is concerned with the human condition of regularly dealing with uncertainty and, almost always, succeeding in dealing with it "rationally." Peirce's second phase is the most prevalent today when scholars think or speak about Abduction; however, after Peirce, much work has been done to conceptually and empirically advance the idea of Abduction and its role in human life.

Further Advances on Abduction

Much of the conceptual work on Abduction has been developed in the writings of Peirce; however, much of the contemporary understanding of abductive reasoning (and its manifold) is also due to further development in different fields of expertise: philosophy and logics (Hanson 1972; Anderson 1986), psychology and cognitive sciences (Thagard and Shelley 1997; Magnani 2009), linguistics and literature (Eco and Sebeok 1983), and many others. In this section, we review the ideas that helped to advance the concept of Abduction and how it relates to the idea of the possible, but, as pointed out before, we will privilege ideas that depart from Peirce's second phase because we

assume it as closer to our purpose of addressing the possible through the lens of Abduction.

One well-known development to Peirce's ideas on abductive reasoning is the work of Norwood R. Hanson in the *Patterns of Discovery* (Hanson 1972). Hanson's contribution on Abduction is mostly related to the philosophy of science, especially to scientific discovery. From Peirce's ideas, we can point to significant inspirations: how to create a new hypothesis through the feeling of surprise or puzzlement (VenuKapalli 2013) and that "backward" reasoning is a step from surprise to explanation (Paavola 2006). In a very Peircean fashion, Hanson's proposition is as follows (Hanson 1972, p. 86):

1. Some surprising or anomalous phenomenon "P" is observed.
2. "P" would be explicable as a matter of course if "H" were true.
3. Hence, there is a reason to think that "H" is true.

This set of claims was often criticized due to the "lack" of soundness (Plutynski 2011). However, for our purposes, this is an astounding achievement in the philosophy of science. This simple syllogistic construction allows us to reflect upon the fact that knowledge construction depends on the observer's constructive and active role in coordinating previous knowledge, observed strangeness (most times related to a feeling or confusion), and a plausible momentary truth giving us tools to operationalize how new knowledge emerges in different contexts, although Hanson has described it mainly on scientific discovery methods.

As Peirce had proposed before, all human inference must come from a natural tendency to deal with information. Scientific thinking is just a complex form of our regular capacity to inference applied to a specific field of knowledge "... all human knowledge, up to the highest flights of science, is but the development of our inborn animal instinct" (Peirce, CP 2.754, 1903). With this, we move forwards into conceptualizing Abduction as the "natural" and "inborn" inferential move of creating "if-true" possible

knowledge. In other words, this accounts for the plausible (and possible) as a momentary truce. Although not a consensus, we remark that within this “model” of discovery, the importance does not rely on data itself but subjects’ reactions. For us, this is a big step into developing a theory of knowledge based on feelings, reactions, and human agency, contrary to data-driven, logical soundness and truth-seeking.

This humanistic understanding of knowledge construction under uncertainty is not bullet-proof to criticism. One criticism of this “broader” idea of Abduction points out that hypothetical thinking must be inferred within the existing premises. Hence, it is not new knowledge. In this sense, Abduction is not sufficient to propose a discovery model (Kapitan 1990). Moreover, as Paavola (2004) pointed out, this criticism sought to distinguish between rational inference and what Peirce accounts for as guessing or instinct. As points Santaella (2005) in Peirce, we can find this distinction. However, this does not diminish the importance of the second one in favor of the first one. On the contrary, this shows that there is more to reasoning than formal logic.

In fact, in modern logic and argumentation theory, Abduction refers to what Gilbert Harman postulates as “inference to the best explanation” (Harman 1965). This model Abduction refers to a subtype of inductive inference that warrants us to logically eliminate alternative explanations to a set of premises (empirically observed or logically formulated). In this sense, Abduction is the process of finding the most probable (or better suited) explanation to a given observation under the available information. Although not directly related to Peirce’s notion of Abduction (especially the second Peirce), this model also allows us to reflect that “the possible” is always part of the knowledge construction processes. It shows us that even under formal logic interests, we cannot escape that uncertainty (or lack of information) drives human minds to a possible that we must accept as an open-to-discussion truth.

The advances in Abduction are not limited to logic or the applied fields of logical propositions. In the investigation, the “methods” of Sherlock Holmes and C. Auguste Dupin, Umberto Eco, and

Tomas Sebeok (1983) argue for a compelling case that the logical methods prescribed in investigative literature were “creative” Abduction (not deductive as most times they are referred to). Their book goes further into the idea that Abduction is always present in the human mind. It is part of the fabric of our cognition. Their several chapters book makes a remarkable work in presenting how to integrate clues and imagination into “quasi-logical” guessing procedure, brilliantly present in Arthur Conan Doyle and Edgar Allan Poe’s novels.

One significant contribution taken from this is how Eco and Sebeok (and many other contributors to the book) recall the importance of semiotics in comprehending Peirce’s logical operation ideas. In this sense the capacity of Abduction to infer signs from signs to make up possible interpretations in a sign-mediated reality, resulting in a big step because the realm of logical validity and truth-seeking frequently claims Abduction. Reclaiming it to the semiotic domain highlights the importance of context, language, and imagination for human “sense-making” of the world.

To sum up the after-Peirce advances on the concept of Abduction, we refer to Thagard’s (2007) four quasi-logical models in Peirce’s ideas: (1) simple hypothetical inferences from objects, (2) existential Abduction, that postulates knowledge to exist in the absence of fact to back it, (3) rule-forming Abduction, a vital inference procedure in theory generation (rules that explain other rules), and (4) analogical Abduction, an inference that uses past cases (or experiences) to further formulate a more complex hypothesis. These four quasi-logical models are a useful description of achievements made by using Peirce’s ideas. Moreover, Aliseda (2006) proposes a simpler version account for Abduction as referred to three levels of inference: (1) a logical parameter involved in formulating explanations (possibility, plausibility, derivability, and others), (2) those “triggers” for new knowledge formulation (e.g., puzzlement and surprise), and (3) the products of abductive reasoning (facts, rules or theories). Although not exhaustive, these two summaries are good descriptions of the uses of

the concept of Abduction throughout different domains of knowledge. However, we still have to make it clear how Abduction and the possible come together.

Abduction and the Possible

For Peirce (and most scholars in this field), the starting point in Abduction must be the feeling of puzzlement, in his particular interpretation (and neglected by others), the central importance of emotion in this mode of reasoning, as astonishment and surprise are both significantly related to emotions and abductive inference in real-world situations (Thagard 2005). In a certain sense, Abduction can be interpreted as a reaction to surprise that enables the formation of the possible, a step toward amplifying what is known through concluding something useful or new (Hintikka 1998).

This tendency to plausibility allows us to infer that Abduction is the process of creating new knowledge based on feeling and intuition (Paavola 2005). Moreover, this tendency varies in degrees of plausibility. As Paavola (2006) says, it goes from “a question meriting attention” to an “uncontrollable inclination to believe.” Abduction tends to create the possible, and for Peirce, this means a possible that obeys the laws of nature and reflects rational human capacities. This “guessing” instinct of reasoning (Santaella 2005) Peirce often points out to be correct and reveal logical goodness (El Khachab 2013). However, weak in form, this type of inference is powerful in creating plausible realities that give texture to everyday life affairs.

The possible interpreted through the lens of Abduction refers to new, if-true, maybe, almost logical construction of (not yet known) knowledge. For that reason, many scholars have described Abduction as a discovery method (Hanson 1972), a starting point for novelty in science (Thagard 2005), the logical requirements to deal with uncertainty (El Khachab 2013). Most importantly, Abduction is interpreted as something that constrains and fosters searching for new ideas (Paavola 2006).

In the following sections, we present three examples of Abduction in different contexts. First, we discuss how abductive modes of reasoning enable scientific discovery and explanation. Second, we present how the application of Abduction-inspired classroom practices fosters imaginative, exploratory, and innovative knowledge construction for students. Third, we present how Abduction is part of how we make up our understanding of everyday life, focusing on how this inference mode is much more present than one would imagine.

Abduction and the Possible in Scientific Discovery

Our departure point for this section refers to Peirce’s own words: “Every single item of scientific theory which stands established today has been due to Abduction.” (Peirce, CP 5.172, 1903) As Gare (2020, see entry ► “[Speculation](#)”) points out, scientific discovery is achieved through speculation because it depends on imagining creative solutions to contradictions, limitations, blind spots, and paradoxes. Moreover, Wilkie (2021, see entry ► “[Speculative Research](#)”) points out that when this type of investigation is in place, one in which we are dealing with surprising or uncertain objects, we are launched into the realm of the unexpected, novel, and “possibilistic.” We go further; what scientists are asked to do is make a possible, acceptable, useful, and plausible knowledge, even if it is not a self-evident truth. To present our case, we use the example of Johannes Kepler’s postulate of Mars’ orbit famously discussed by Peirce.

Kepler’s case is quite famous among scholars who study Peirce’s work. Peirce (CP 2.96, 1902) says that when observing the orbits of the planet Mars, they behave as if they were elliptical. Note that this as-if thinking made Kepler so inclined to this conclusion that he applied (or created) a model to verify if it was also true for the other planets and parallaxes observed in the data. Kepler’s discovery is an abductive move in Peirce’s notion not because he found the right

answer but because he found it through feeling inclined to something and then tested it afterward. This discovery is now used to discuss several points: new knowledge is not the result of a single person's genius (Hanson 1972), to exemplify the rational process of finding an explanation to surprising data (McKaughan 2008) and how creative and inventive processes of analogy do scientific thinking (Kapitan 1990; Gentner 2002). In this case, the Possible results of a constructive process of feeling and pursuing an intuition, what Magnani (2009) calls "creative Abduction."

Abduction and the Possible in Teaching and Learning

Educational settings are fruitful spaces for reasoning processes to emerge, develop, and establish within social practices of learning. Deduction or induction base most of what is said about teacher and students' reasoning in classroom activities. The first one accounts for formal procedures of reasoning based on syllogistic truth-seeking methods, mostly concerned with necessary truth conditions for knowledge. The second one refers to learning based on generalizations from data, especially in the learning of natural sciences. These practices look for true, valid, and accurate scientific concepts.

However, a very current student practice, but less conceptualized or even explored as useful, occurs when students explore knowledge through different alternatives, promoting as-if statements that defy consolidated and normative school knowledge. Haig (2012) calls it abductive learning when applying different forms of abductive reasoning to different learning activities that ask students to formulate explanations and test hypotheses for an observed phenomenon.

In a different direction, other researchers address the abductive processes in education in a broader sense. For Rapanta (2018), active methodologies that rely on engaging classroom discourse, such as argumentation, actually foster abductive reasoning and not formal logic or possible generalizations. In other words, that what we ask our students to do when using discourse such

as argumentation is to explore possible alternatives to explain, advance, reject, or strengthen an opinion based on coordinating previous and new knowledge. Moreover, Larrain (2017) argues that deduction and induction are insufficient to explain the development of concepts. There must be a mechanism responsible for anticipating, reviewing, and reorganizing new knowledge. In this sense, she says that formulating and evaluating the (im)plausibility of something revolves around imagination. For concept development and learning, then, imagination is necessary because it moves the here-and-now knowledge to surpass borders not yet known.

In the same spirit, one example of this approach to learning processes is Macêdo's (2021) work observing university students discussing personality development theory in Psychology. In this work, the author presents how students frequently engage in the "if-true, then. . ." type of reasoning using different psychological concepts in order to make sense of the concept of gender transition, without instructions to do it in this particular way. Initially, the case seems to be a rather traditional deductive inference structure "if. . . then. . ." However, we point to the use of an if-like type of discourse meant to expand the boundaries of the concepts in order to evaluate what they did apply for or not; in other words, the students were not making deductive movements trying to infer an existing conclusion, they were actually proposing best possible explanations if the use of personality would apply or not to a variety of situations. For the students engaged in the conversation, it was essential to see if the role of nature and nurture in the constitution of personality implied what notion of transformation and to what extent this transformation would be conscious or voluntary. With different scenarios and creating possible worlds, the students were able to coordinate, assess, and formulate different positions that could be plausible through "as-if" thinking; they were experimenting with the plausibility of concepts and not with certainty of them. Even when engaging wrongly with some canonical concepts, this "if-true" "maybe" reasoning allowed them to move forward the boundary of the concepts discussed.

Unlike conditional thinking, we highlight here that the imaginative, creative, momentary theory construction made it possible for the students to engage critically in the subject-matter in a way traditionally they would not be able to.

Abduction and the Possible in Ordinary Life

While the two before mentioned examples speak of effortful and deliberative processes (at least as part of scientific discovery or learning), we now address a relatively fast and uncontrolled interpretation of Abduction (Thagard 2005, 2007; Magnani 2015). In many interpretations, Abduction is the process of discovering or unveiling “existing” knowledge, or at best, bringing to light hidden information through a weaker form of inference (Paavola 2006). That is mostly due to the impact of Peirce’s ideas on logic and the philosophy of science. However, when considering how the later Peirce relates to contemporary psychology of reasoning, and even cultural psychology, the boundaries of Abduction are stressed to limits outside formal logic and thrown into the human mind relation to reality, what many logicians worry as “psychologism.” Now, we address how Abduction shapes (not discovers) our reality. We aim to show that Abduction is part of everyday life as a vital and concrete experience (Nubiola 2005) of making the “best possible” out of our previous knowledge (or ignorance).

Magnani (2015) proposes that abductive reasoning is a type of response to ignorance-problems. Ignorance (see entry ► “Ignorance”) is taken as uncertainty, puzzlement, or unexpected knowledge demanding situation (we could risk stating that all situations are these in nature). Moreover, he proposes that Abduction is an ignorance-mitigating type of reasoning, meaning that there are other less useful types of responses (non-mitigating) and that abductive reasoning is a large part of how our cognition handles reality. He proposes that ignorance-problems triggers one of three types of responses: (1) ignorance overcome due to additional knowledge necessary in that context, (2) acceptance and surrendering to

ignorance (or at least partially), and (3) ignorance is used as the basis for new knowledge, in this sense, we abduce from constitutive ignorance. Magnani’s work is an essential step in developing a theory on how we deal with uncertainty through abductive means while creating new knowledge that helps us surpass situational ignorance, be it at decision making, professional practices, or art appreciation.

On the presence of Abduction in our lives, Thagard’s (2007) view helps us understand the role of emotion and intuition in our rationality. Most of what is made from Peirce’s ideas on Abduction is related to the logical strength of this mode of reasoning. However, Thagard (2007) says that one missing point is that even in Peirce’s work, Abduction departs from and arrives at emotional states. For him, the process of Abduction starts at the feeling of puzzlement and ends at the satisfaction of knowing. This concept is vital because it reclaims the role of psychological processes in our understanding of the world.

Following Peirce’s idea of “[...] the perceptual judgments, are to be regarded as an extreme case of abductive inference” (CP, 5181 1903), Thagard (2007; Thagard and Shelley 1997) presents an interpretation of Abduction related not only to logical and verbal acts of reason but as part of our forms of inferring the surrounding reality. For him, Abduction is a multimodal type of inference that coordinates our emotional reaction and guides us to the satisfaction of finding plausible knowledge.

This interpretation is not only well described but originates from Peirce’s own words. Now we look at an example of how abductive inference is part of the ordinary experience of everyday life events in Peirce’s words:

Looking out my window this lovely spring morning I see an azalea in full bloom. No, no! I do not see that; though that is the only way I can describe what I see. That is a proposition, a sentence, a fact; but what I perceive is not proposition, sentence, fact, but only an image, which I make intelligible in part by means of a statement of fact. This statement is abstract; but what I see is concrete. I perform an Abduction when I so much as express in a sentence anything I see. *The truth is that the whole fabric of*

our knowledge is one matted felt of pure hypothesis confirmed and refined by induction. Not the smallest advance can be made in knowledge beyond the stage of vacant staring, without making an Abduction at every step. (MS 692, 1901 – our emphasis)

This idea of Abduction allows us to conclude that our reality is a recurrent process of guessing and readjusting our knowledge to our senses. In this sense, the possible is not discovered or is a probable event. The possible, interpreted through this amplified idea of Abduction, is the reality in itself, and the process to construct (not discover) is abductive, fast, and uncontrolled inference. With this example, we point to the accomplishment of Peirce in presenting (or reviewing) how our current state of real worldliness is momentary and conformed by our best possible knowledge in a given context.

Conclusion

We aimed to present how Abduction is developed in Peirce's early and late phases with this entry. Following the latter, we discuss how the possible is only ever realized in life because of this peculiar mode of reasoning. Abduction, then, should be viewed as a natural modality of inferences that has two sides to it: on the one hand, it can be developed through effortful and deliberate reasoning, and on the other as a fast and uncontrolled inference that shapes our perception of reality. The first mode of reasoning is generally applied to the possible as a scientific discovery, justified guessing, and useful explanation that helps foster novel knowledge (be it at scientific or classroom level). The second mode, less formalized but more pervasive, is mostly used in the perceptual investigation and everyday life understanding, primarily relating to how we actively construct our reality. Both of them derive from surprise and puzzlement, and for this reason, Abduction is a particular case of reasoning because it brings emotion and intuition to the "logical" equation. We conclude, then, that Abduction is not only a

rational procedure but the tendency to find plausible and useful solutions that mitigate ordinary life "ignorance."

Cross-References

- ["As If" Thinking](#)
- [Concept Formation](#)
- [Ignorance](#)
- [Serendipity](#)
- [Speculation](#)
- [Speculative Research](#)
- [Surprise](#)

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Action Research

David Coghlan

Trinity Business School, University of Dublin

Trinity College, Dublin, Ireland

Abstract

Action research is an approach to research which aims at both taking action and creating knowledge or theory about that action as the action unfolds. It starts with everyday experience and is concerned with the development of living knowledge. Its characteristics are that it generates practical knowledge in the pursuit of worthwhile purposes; it is participative and democratic as its participants work together in the present tense in defining the questions they wish to explore, the methodology for that exploration, and its application through cycles of action and reflection. In this vein they are agents of change and coresearchers in knowledge generation and not merely passive subjects as in traditional research. In this vein, action research can be understood as a social science of the possible as the collective action is focused on creating a desired future in whatever context the action research is located.

Keywords

Action research · Change · Development ·
Emancipatory research · Participatory research

Introduction

As the name suggests, action research is an approach to research which aims at both taking action and creating knowledge or theory about that action as the action unfolds. It rejects the notion that research must be value free in order to be credible, in favor an explicitly socially engaged and democratic practice (Brydon-Miller et al. 2003). It embraces the notion that knowledge is socially constructed and that social science is embedded within a system of values and promotes human interaction (Coghlan et al. 2019). It has many origins and roots (Greenwood and Levin 2007; Bradbury 2015): in Aristotelian philosophy, in the social psychology of Kurt Lewin, in critical theory, in American pragmatic philosophy, and in various schools of liberation and emancipatory thought, notably Marxist and feminist and liberation theology. While the work of Lewin and the tradition of organizational change, referred to as organization development (OD), the socio-technical work of the Tavistock Institute in the UK, and the workplace democracy work in Scandinavia are the major roots for action research organizational studies (Pasmore 2001; Bradbury et al. 2008), there are important roots and strands of action research existing outside of organization and management research. The consciousness-raising work of Paulo Freire and the Marxist-based liberation movements (frequently referred to as emancipatory or participatory action research), feminist approaches to research, the return to epistemological notions of praxis, and the hermeneutic school of philosophy associated with the work of Habermas are important strands and expressions of action research which did not grow out of the post-Lewin tradition in organizations (Bradbury 2015).

Three main characteristics of action research distinguish it from other research approaches. First, action research has a dual focus: to address

a real-world issue and to contribute to theory. Second, action researchers do not merely observe something happening, they work actively at making positive changes. Third, action research is participative and democratic in nature, as research is undertaken *with* participants rather than *on* or *for* them. Susman and Evered (1978, p. 601) make the case that action research “constitutes a kind of science with a different epistemology that produces a different kind of knowledge, a knowledge that is contingent on the particular situation and which develops the capacity of members of organizations to solve their own problems.” In using the term, “scientific,” they argue, there is a need to move away from adopting frameworks from natural science in order to engage with the world of practice. As Coghlan (2016) describes, action research contributes to the realm of practical knowing as it focuses on personal, organizational, or community improvement and change and seeks to contribute knowledge that is actionable, and not merely theoretical as most research approaches do. Thus it can be understood as a social science of creating the possible. This entry provides an account of the theory and practice of action research, exploring how it focuses on pursuing worthwhile purposes in a collaborative manner.

What Is Action Research?

Action research may be defined as:

A participatory process concerned with developing practical knowing in the pursuit of worthwhile human purposes. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities (Bradbury 2015, p. 1).

To unpack the elements of this definition, a primary purpose of action research is to produce practical knowledge that is useful to people in the everyday conduct of their lives and their future. Accordingly, it is not about knowledge for its own sake, but knowing in the pursuit of worthwhile purposes, which may be defined in many ways from climate change, sustainable development, to

enhancing an urban or rural community, or improving an agency's service to its clients. Of course, what constitutes a worthwhile purpose and for whom is an inquiry in its own right. As action research generates practical knowledge in the pursuit of worthwhile purposes, it is participative and democratic as its participants cooperate in creating the worthwhile possible future. Participants work together in defining the questions they wish to explore, the methodology for that exploration, and its application through cycles of action and reflection. In this vein they are coresearchers and agents of change and knowledge generation and not merely passive subjects.

Action research starts with everyday experience and is concerned with the development of living knowledge. It draws on diverse forms of knowing (referred to as the extended epistemology).

- *Experiential knowing* – the knowledge arising as people encounter the realities around them
- *Presentation knowing* – the knowledge expressed in giving form to experiential knowing through language, images, music, painting, and the like
- *Propositional knowing* – the knowledge distilling experiential and presentation knowing into theories, statements, and propositions
- *Practical knowing* – the knowledge that brings the other three forms of knowing to full fruition by doing appropriate things skillfully and competently

Heron and Reason (1997) argue that practical knowing is primary as it integrates other forms of knowing. Practical knowing opens up new forms of engagement with the world (experiential knowing) and leads to representing this experience in significant patterns (presentation knowing), which in turn feeds into a revised propositional understanding of the originating questions.

An added dimension to the engagement in practical knowing as a philosophy of research is that it involves researching in the present tense (Coghlan and Shani 2017). Action research builds on the past, takes place in the present with a view to shaping the future. Accordingly, engagement in

the cycles of planning, taking action, and reflection performs both a practical and philosophical function in its attentiveness and reflexivity as to what is going on at any given moment and how that attentiveness yields purposeful action and learning. In summary, action research is a living, evolving process of coming to know rooted in everyday experience; it is a verb rather than a noun.

The Philosophies of Action Research

Action research has a solid grounding in many philosophical approaches: Aristotelian praxis, American pragmatic philosophy, Habermasian communicative action, the Lewinian social psychology of change, phenomenology, critical theory, constructivism, social constructionism, critical realism, and in the philosophy of Wittgenstein. *The SAGE Encyclopedia of Action Research* (Coghlan and Brydon-Miller 2014) provides rich introductions to action research's diverse philosophical foundations and expressions. Susman and Evered (1978) argue that the conditions from which people try to learn in everyday life are better explored through a range of philosophical viewpoints: Aristotelian praxis, hermeneutics, existentialism, pragmatism, process philosophies, and phenomenology. They proposed that action research provides a corrective to the deficiencies of standard social sciences practices by being future oriented, collaborative, agnostic, and situational implying system development and so generating theory grounded in action. The case is made that after the linguistic turn of postmodernism it is now time for the action turn in generating knowledge that is both valid and vital to the well-being of individuals, communities, and the promotion of larger-scale democratic social change.

At a glance action research seems to have a relationship with "Responsible Research and Innovation" (RRI), a term used within the European Union to denote forms of scientific research and technological development processes that take the effects and potential impacts on the environment and society into account

(Owen et al. 2013). While operating in different spheres of science, social, and physical, both are grounded in societal challenges that need to be addressed and are accountable to society and not solely to an academic discipline.

Three Practices of Action Research

As action research is a collaborative process that is undertaken in the present tense in order to achieve a worthwhile purposes, there are three sets of practices running concurrently. These are referred to as first-, second-, and third-person practice (Bradbury 2015). What is meant by these terms is that engaging in action research involves challenges of self-learning and generates subjective data in the present tense for the action researcher (first person), working with others to achieve the task which generates data in the present tense about working together (second person), and making a contribution to future action by others and to useful knowledge (third person). Traditional research has focused on creating impersonal knowledge for an impersonal readership. In a more complete vision of research as presented by action research, authentic third-person research integrates first- and second-person practices.

- *First-person practice*: As action researchers are working in the pattern of practical knowing and engaging in action research cycles with others and trying to understand and shape what is going on, they are engaging also in their own experiential learning activities, what is called first-person practice (Marshall 2016). Here, some of the core skills that action researchers need are in the areas of self-awareness and experiential learning. Keeping a learning journal is often a key tool for first-person practice.
- *Second-person practice*: Second-person practice addresses action researchers' engagement in collaborative work in co-inquiry and shared action with others on issues of mutual concern, through face-to-face dialogue, conversation, and joint decision-making and shared action and learning (Schein 2013).

- *Third-person practice*: Third-person practice is impersonal and is actualized through the contribution of the action research to an audience beyond those directly involved, such as through dissemination by reporting and publishing. Action research intentionally merges theory with practice on the grounds that actionable knowledge can result from the interplay of knowledge with action (Huxham 2003). It demands an explicit concern with theory that is generated from the conceptualization of the particular experience in ways that are intended to be meaningful to others.

Quality in Action Research

As with all approaches to rigorous inquiry, the action research paradigm requires its own quality criteria, taking quality to mean a grade of excellence. Action researchers argue that action research should *not* be judged by the criteria of traditional science, but rather within the criteria of its own terms. The characteristics of action research in the above definition by Bradbury et al. (2015) provide a set of quality criteria:

1. To what extent was the action research pursuing a worthwhile purpose?
2. To what extent has it produced practical knowledge that is useful for practitioners and robust for scholars?
3. To what extent did the action research involve all stakeholders both in the questioning and sensemaking that informed the research, and in the action?
4. To what extent did it develop over time in an evolutionary and developmental process, as individuals developed skills of inquiry and as a community of inquiry developed within a community of practice?

Settings in Which Action Research Is Practiced

Action research is practiced across a wide range of settings: business, education, nursing, health care,

community development, gender studies, and others (Bradbury 2015; Banks and Brydon-Miller 2018). Each of these setting has its own context. For instance, in the context of business and management, action research operates in the realm of strategies, practical tasks, and structured hierarchical organizational systems. Challenges to improve customer service, technology management, human resource management, supply chain management, and organizational change, for example, may occur in diverse business sectors (Shani and Coghlan 2019). In health care and nursing, action research addresses challenges of service improvement (Koshy et al. 2011; Williamson and Bellman 2012). In community development the context is largely unstructured as community organizations mobilize to engage in action to create social change (Chevalier and Buckles 2019). There is action research work being conducted to address the major contemporary global challenges: climate change, sustainability, social inequality and injustice, development, and immigration.

Action researchers are generally external to the organizations and communities with which they work, what Greenwood and Levin (2007) refer to as the “friendly outsider.” They may be academics, professional researchers, community development professionals, or organization development consultants whom a local organization, agency, NGO, or community engages to assist it with achieving the task it has identified. There is also a growing incidence of action research being done from within organizations by insiders, as when practicing managers undertake action research projects in and on their own organizations or communities (Coghlan 2019). This role is increasingly common in the context of managers participating in academic programs. In such contexts the manager takes on the role of researcher in addition to their regular organizational roles and may both manage the change project and study it at the same time.

Modalities of Action Research

One of the features of contemporary action research is that it has become a family of

approaches or modalities (Bradbury 2015). Within the theory and the practice, one finds terms like action learning, appreciative inquiry, collaborative developmental action inquiry, cooperative inquiry, learning history, and participatory action research, to name some common ones. Coghlan (2010) suggests that a way of understanding these modalities is how each modality is based on a generative insight that led to the framing of each particular modality by the person or group that first constructed it. By a generative insight he means an insight that was foundational in framing that modality and which led to the development of further insights and methods of working within each modality.

Action Learning: Action learning was articulated by Revans (1998) whose generative insight is expressed in two statements. “There can be no learning without action and no (sober and deliberate) action without learning” (p. 83) and “Those unable to change themselves cannot change what goes on around them” (p. 85). Grasping this insight is at the heart of understanding what action learning it is about, how it works, and what it seeks to achieve. Revans (1971) framed what he refers to as a *praxeology* of human action in terms of three processes:

- System *alpha*: A process of inquiry into the issue under consideration – its history, manifestation, what has prevented it from being resolved, and what has previously been attempted
- System *beta*: A rigorous exploration of the resolution of the issue through cycles of action and reflection
- System *gamma*: Individual learning through critical reflection in a group process

Appreciative Inquiry: Appreciative inquiry is built on the generative insight of inquiry as positive, that is, if people focus on what is valuable in what they do and try to work on how this may be built on, then it leverages the generative capacity to facilitate transformational action (Whitney and Trosten-Bloom 2010). This insight is itself made up of several insights: that in every organization something works somewhere, what people focus

on becomes their reality, and the language they use creates that reality. The act of asking positive questions influences people by getting them to think in new ways which may lead to acting in new ways. The appreciative inquiry cycle utilizes 4 *Ds* (*Discovery, Dream, Design, and Delivery*) to enable researchers and practitioners to move from experience to selected action and to attend to and receive insights into understand the power of positive questioning. In many respects appreciative inquiry demonstrates an explicit social science of creating the possible.

Collaborative Developmental Action Inquiry: Torbert and Associates (2004) understand collaborative developmental action inquiry as a science of action where, through insights from developmental psychology, leaders can gain insight into their own action-logics as they work to transform their organizations. From a generative insight Torbert adds the developmental dynamic of learning to inquire-in-action by emphasizing that as individuals progress through adulthood they may intentionally develop new “action-logics” through stages of ego development in how they learn to act in a timely manner.

Cooperative Inquiry: Heron and Reason (2008) define cooperative inquiry as “a form of action research in which all participants work together in an inquiry group as co-researchers and co-subjects” (p. 366). The participants research a topic through their own experience of it in order to understand their world to make sense of their life and develop new and creative ways of looking at things and to learn how to act to change things they might want to change and find out how to do things better. The generative insight for understanding cooperative inquiry is how each person is a *co-subject* in the experience phases by participating in the activities being researched and is a *coresearcher* in the reflection phases by participating in generating ideas, designing and managing the project, and drawing conclusions.

Learning History: The goal of a learning history is to increase participation in a dialogical reflection on a past action with a view to creating desired future practices (Bradbury et al. 2015). A learning history presents the experiences and understandings in the own words of those who

have gone through and/or been affected by the change in order to help the organization move forward and to contribute to our understanding of the social dynamics of organizational change. Rather than presenting the univocal voice of a single author or group of researchers, the learning history presents concurrent, multiple, and often divergent voices in an organizational story. Presenting the jointly-told tale is enabled by the format, whereby columns of narrative text are juxtaposed with interpretative voice of participants (often disagreeing) and the voice of the learning historian. The generative insight underpinning the learning history is that by presenting the history through the jointly-told tale readers may learn about organizational change. Readers of a learning history are encouraged to attend to the questions that arise from their engagement with the text as they choose which column to read first and how they might switch back and forth from participants’ narrative and learning historians’ comments, and to the insights they receive from reading multiple voices and perspectives (Gearty and Coghlan 2018).

Participatory Action Research (PAR): Participatory action research is generally understood as the form of action research that is conducted in communities, rather than in organizations. The term describes a variety of community-based approaches to knowledge generation, which combines social investigation, education, and action and emphasizes local communities in coproducing knowledge directly relevant to them for an agenda of social change (Chevalier and Buckles 2019). The generative insight underpinning this approach is that people, especially the perceived marginalized and underprivileged, can be enabled to investigate their circumstances, gain critical insight into the structures that create and maintain those circumstances, and engage in action to liberate themselves from the constrictions, if not the oppression of these structures.

There are other modalities, which are being explored in such publications as *The Sage Encyclopedia of Action Research* (Coghlan and Brydon-Miller 2014) and *The Sage Handbook of Action Research* (Bradbury 2015). It may be noted

that modalities are not mutually exclusive and some may be used together.

Action Research as the Social Science of the Possible

Social science distinguishes itself from the natural sciences in being interpretive about human experience, as it explores the meaning of how people understand themselves and their experience (Coghlan et al. 2019). Human living is mediated largely through acts of meaning (Lonergan 2005). People express themselves through language, art, symbols, rituals, how they live, and what they do. They are constantly engaging in acts of meaning in their experiencing, their understanding, their judgments, their decisions, and their actions. Meaning is not only what is experienced but is also what is questioned, understood, interpreted, and affirmed. There is also the meaning they create by intending, investigating possibilities, planning, weighing options, making contacts, taking action, and learning. Meanings are shared in communities and organizations which come about because people share common meanings from common fields of experience, common understandings, common measures of judgment, and common consent.

Human living can be understood only in terms of meanings, such as purpose and value, terms that do not apply to knowledge of the physical world. As action research begins with everyday experience and is concerned with the development of living knowledge, it seeks to generate practical knowledge in the pursuit of worthwhile purposes. Its participative and democratic values' base acts as the foundation of how its participants work together in the present tense in defining the issues they wish to address, the questions they wish to explore, the methodology for that exploration, and its application through collaborative cycles of action and reflection. Action research is emancipatory; it leads not merely to a new situation and to new practical knowledge, but also to new abilities to create knowledge. In this vein it can be understood as a social science of the possible as the collective action is focused on creating

a desired future in whatever context the action research is located.

Summary

This entry has presented action research as a social science of the possible. Action research is emancipatory as an approach to research that does not distinguish between research and action; it addresses the theme of research in action in the pursuit of worthwhile purposes. It leads not merely to new practical knowledge, but to new abilities to create knowledge.

Cross-References

- ▶ [American Pragmatism](#)
- ▶ [Constructivism](#)
- ▶ [Creative Problem-Solving](#)
- ▶ [Feminisms](#)
- ▶ [Participation](#)
- ▶ [Possible in Sociology](#)
- ▶ [Social Change](#)

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Adjacent Possible

Lennart Björneborn

Department of Communication, University of Copenhagen, Copenhagen, Denmark

Abstract

Adjacent, i.e., nearby, possibilities constantly emerge in a multitude of settings for a multitude of entities. When these possibilities are explored, yet new possibilities emerge. The concept of the “adjacent possible” was introduced by Stuart Kauffman (1996; 2000) in evolutionary biology and complex adaptive systems to explain how biological evolution can be seen as exploration and actualization of what is adjacent possible, i.e., available at hand. The concept has now disseminated into a wide range of research fields including economy, innovation studies, technological evolution, cultural evolution, learning processes, recommender systems, and design studies.

The “adjacent possible” can be defined as “the set of possibilities available to individuals, communities, institutions, organisms, productive processes, etc., at a given point in time during their evolution” (Loreto 2015, p. 9). The concept of the “adjacent possible” is useful for understanding how new possibilities emerge, and how they are constrained, discovered, explored, actualized, developed, reconfigured, designed, and so on, in an interplay between what is actual and what is possible for specific entities in specific settings.

In this entry, the history and the state of art of research on the “adjacent possible” is briefly outlined. Discussion focuses on four essential aspects of “adjacent possibles”: (1) topologies

of “adjacent possibles,” (2) types of “adjacent possibles,” (3) serendipity as actualization of “adjacent possibles,” and (4) designing for “adjacent possibles.”

Keywords

Adjacent possible · Affordance · Enablement · Evolution · Actualization · Possibility spaces · Topology · Diversity · Serendipity · Design

Introduction

The world is full of possibilities, and new possibilities constantly emerge in a multitude of settings. Possibilities emerge on individual and collective levels, from micro to macro settings. When possibilities are explored, yet new possibilities emerge.

New possibilities are part of human everyday lives. As stated by Loreto et al. (2016), we “constantly adopt new technologies, conceive new ideas, meet new people, and experiment with new situations” (p. 59).

We live surrounded by possibilities we can discover, explore (or ignore), interact with, and make use of, depending on our capabilities, experiences, and interests.

However, not all things are available and possible in all situations. This is an important aspect of the so-called “adjacent possible.” Thus, there are **limits** to what are adjacent, i.e., nearby, possibilities in specific situations in specific environments for specific entities/agents, depending on **affordances**, i.e., capacities, usage potentials, of the specific environments (► [Affordance](#)).

In evolutionary biology and complex adaptive systems, the concept of the “adjacent possible” was introduced by Stuart Kauffman (1996, 2000) to explain how “**biospheres**, on average, may enter their adjacent possible as rapidly as they can sustain” (Kauffman 2000, p. 22). This means, **evolution** can be seen as an exploration of the adjacent possible, or as expressed by Kauffman (2017), “life literally creates the opportunities into which it then becomes.”

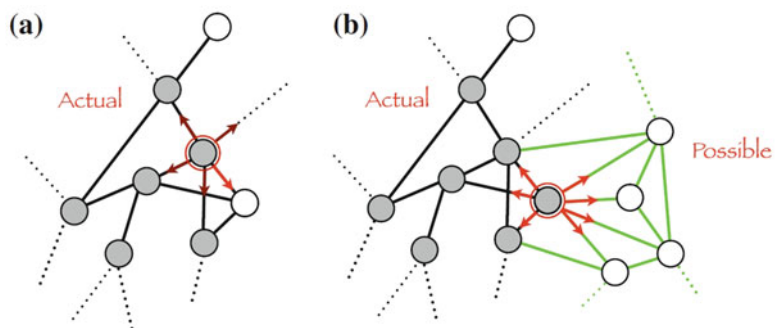
As will be further outlined below, the concept has now disseminated into a wide range of research fields including economy, innovation studies, technological evolution, cultural evolution, evolution of language, conversation analysis, learning processes, recommender systems, and design studies.

The “adjacent possible,” cf. Fig. 1, can be defined as “the set of possibilities available to individuals, communities, institutions, organisms, productive processes, etc., at a given point in time during their evolution” (Loreto 2015, p. 9). There is a rich variety of entities each with their own sets of adjacent possibilities. This variety is accentuated by another definition of the “adjacent possible” as “the set of things – could be molecules, organisms, technological products, ideas, etc. – that are one step away from what actually exists and that could be reached by the **incremental recombination** of the existing elements” (Gravino et al. 2019, p. 2).

An example of the “adjacent possible” could be how new **technologies** emerge and evolve at specific points in time when specific technological, organizational, cultural, societal, etc., preconditions are at hand to enable the next

Adjacent Possible,

Fig. 1 Illustration of the “adjacent possible” in a graph that conditionally expands from situation (a) to situation (b) when the white node in (a) is visited for the first time (Loreto et al. 2016)



“adjacent possible” steps. The **World Wide Web**, WWW, was **invented** in 1990 – as an “adjacent possible” technology at that time – by combining newly available technologies, like the Internet, hypertext, SGML markup language, and personal computers (Invention, Possible in Technology).

When adjacent possibilities emerge and are actualized, that is, are unfolded and made use of, like in the WWW example above, new possibilities do not come alone. Instead, they come with “an entourage of surrounding possibilities, a cloud of other potentially new ideas or experiences that are thematically adjacent to it and hence can be triggered by it” (Tria et al. 2014, p. 1). Possibilities often unfold exponentially with **bursts** of new possibilities enabling yet new possibilities, as can be seen, e.g., in the last 30 years of immense media development on the Web.

The concept of the “adjacent possible” is useful for understanding how new adjacent possibilities emerge, and how they are constrained, ignored, discovered, explored, actualized, developed, disseminated, reconfigured, designed, and so on, in an interplay between what is actual and what is possible for specific entities in specific settings at specific points in time.

Steven Johnson (2010) presented the concept of the “adjacent possible” for a bigger audience – also in academia – with his book *Where Good Ideas Come From: The Natural History of Innovation* (► [Innovation](#)). According to Johnson, “the adjacent possible is a kind of shadow future, hovering on the edges of the present state of things, a map of all the ways in which the present can reinvent itself” (p. 31). Johnson underlines how the boundaries of the “adjacent possible” grow as they are explored: “Think of it as a house that magically expands with each door you open” (p. 31).

Every adjacent possible thing that we actualize – like visiting a new node in Fig. 1, or opening a door into a new available room in Johnson’s expanding house of possibilities – enables discovery of, and accessibility to, yet new possibilities we can choose to actualize. In this way, the adjacent possible emerges when explored.

In the rest of this entry, the adjacent possible will be written without quotation marks. The plural form, adjacent possibles, will be used in line with terminology by, e.g., Kauffman (2014) and Cambray (2019).

In the following section, the history and the state of art of research on the adjacent possible will be briefly outlined. The subsequent discussion focuses on four essential aspects of adjacent possibles: (1) topologies of adjacent possibles, (2) types of adjacent possibles, (3) serendipity as actualization of adjacent possibles, and (4) designing for adjacent possibles.

History and State of the Art

Stuart Kauffman (1996) introduced the concept of “the adjacent possible” in a working paper on “the nature of autonomous agents and the worlds they mutually create” in **evolutionary biology** and **complex adaptive systems**. The working paper was transformed into a book in which Kauffman (2000) outlines the new concept in relation to how “autonomous agents forever push their way into novelty – molecular, morphological, behavioral, organizational” (p. 22). Kauffman formalizes this push into **novelty** as “the mathematical concept of an ‘adjacent possible’” (ibid.) (► [Novelty](#)).

Kauffman (in Brockman 2003) discusses how **biospheres** on average keep expanding into the adjacent possible. By doing so, they “increase the **diversity** of what can happen next,” and thus, they may “maximize the rate of exploration of the adjacent possible” (ibid.). According to Kauffman (2017) this means, “[d]iversity begets more diversity” (Diversity).

Evolution as an exploration into the adjacent possible, means the biosphere is envisioned as “incrementally expanding in stepwise fashion” (Cambray 2019, p. 63). Cambray further notes that, when abstracted, this approach is “of more general utility in examining how **complexity** evolves in our universe from various points of origin (e.g., the big bang; the formation and clustering of galaxies, stars, planets; life; mind; civilization and so on)” (ibid.) (► [Complexity](#)).

A key feature of the topological structures of adjacent possible spaces is that they are constantly restructured and **reconfigured** when novelties appear. Gravino et al. (2019, p. 8) state how “the adjacent possible space is dynamically reshaped while it is explored” and Hochberg et al. (2017, p. 9) note the “**recombinatory** shuffling” in connection with how “**novelty** and **innovation** alter spaces and generate new spaces.”

The key feature of “**reconfigurability**” of adjacent possible spaces is strongly interweaved with another key feature: “**unprestatability**” (Longo et al. 2012). It is not possible to prestate, i.e., **predict**, the evolution of all adjacent possibilities (Prediction). In other words, the **topology** of adjacent possible spaces is not predictable but “unprestatable” (Kauffman 2000), as it is constantly reconfigured, i.e., reshaped and restructured by new possibilities that are explored and actualized. Kauffman thus argues against the predictability of evolution, and states, “we cannot mathematize the detailed becoming of the biosphere” (Kauffman 2014, p. 3).

Instead of “entailing laws” determining the evolution of the biosphere, Kauffman (2014, p. 4) points to “**enablement**” as an evolutionary driving force. He outlines an explanatory framework for how “Actuals” emerge in evolution and constitute new “**boundary conditions** that are **enabling constraints**” (p. 3) for new adjacent possibles enabling yet new actualizations enabling yet new adjacent possibles. This means, evolution “flows into a typically unprestatable succession of adjacent possibles” (p. 3).

In a similar vein, McCaffrey and Spector (2018) use the concept of the adjacent possible in relation to so-called “**nonenumerability**,” meaning the set of possible interactions that an object can participate in is not computably enumerable (p. 3). This is line with Kauffman (2019, p. 135) who exemplifies, “we find new uses of screwdrivers all the time. But these new uses are typically unprestatable.”

In this context, Kauffman (2000) discusses so-called “**dimensionality**” as the “number of types of events that can happen next” (p. 22). The topological space of possibilities has a “dimensionality” that is “unprestatable” as we

“cannot measure the ‘size’ of the Adjacent Possible” (Kauffman (2019, p. 135). Stressing this “unprestatable, **open-ended becoming**” (Kauffman 2017), “not only do we not know what will happen, we do not even know what can happen” (ibid.).

In his book *A World Beyond Physics: The Emergence and Evolution of Life*, Kauffman (2019) discusses the adjacent possible and draws parallels between the **biosphere** and the global **economy**. Just like new species in the biosphere create niches for further new species, according to Kauffman, new goods in economy “create niches for yet further new goods and services and production capacities” (p. 137) (Economy).

The concept of the adjacent possible has now disseminated into a wide range of research fields, including **economy** (Kauffman 2019), **innovation studies** (Hochberg et al. 2017; McCaffrey and Spector 2018), **technological evolution** (Tria et al. 2014), **cultural evolution** (Gravino et al. 2016), **evolution of language** (Ferrer-i-Cancho 2016), **biosemiotics** (Favareau 2015), **artistic emergence** (Hoelscher 2014), **design studies** (Ruttonsha 2017), **recommender systems** (Gravino et al. 2019), **learning processes** (Jörg 2017), **conversation analysis** (Favareau 2015), and **psychotherapy** (Cambray 2019). Some of these studies have already been mentioned. Some of the others will briefly be outlined here.

Substantial research on the adjacent possible has been done by the *Kreyon* project, 2014–2017, based at the Institute for Complex Systems at the Sapienza University of Rome. They have investigated the “dynamics of novelties correlated via the adjacent possible” (Loreto et al. 2016), seeing it as “a fundamental factor in the evolution of human societies, biological systems and technology” (Loreto 2015, p. 1). The project has developed **mathematical models** for the adjacent possible in processes of **creativity** and **innovation** “both at the individual and collective level” (p. 7).

In several papers, researchers in the *Kreyon* project have published results from their empirical investigations and mathematical modelling of the adjacent possible (e.g., Tria et al. 2014; Loreto

2015; Loreto et al. 2016; Gravino et al. 2016; Monechi et al. 2017; Tria et al. 2018; Gravino et al. 2019).

Key notions in the Kreyon project were “innovation” and “novelty” (Innovation, Novelty). **Innovation** here meaning “something created for the first time, something new to the world, something never seen before” (Tria et al. 2014, p. 1). By contrast, a **novelty** is “merely anything that is new to you (or to someone else)” (ibid.). The researchers investigated the “dynamics of **correlated novelties**” (ibid.), i.e., how novelties enable yet new novelties. A mathematical model was tested on four data sets of novelties in different **cultural systems**: edits in Wikipedia, tags in annotation systems, word sequences in texts, and finding new songs in online music catalogues. Results showed similar patterns between how novelties emerge in everyday life and how innovations emerge from the adjacent possible.

As noted by Gravino et al. (2016, p. 115), “[e]ach new outcome of a cultural system is influenced by prior outcomes,” e.g., edits in Wikipedia that add to previous edits. This is related to notions of “**cumulative cultural evolution**” and “**cumulative technological evolution**” (Mesoudi et al. 2013), and in line with Johnson (2010, p. 33) stating, “[t]he history of life and human culture, then, can be told as the story of a gradual but relentless probing of the adjacent possible, each new innovation opening up new paths to explore.”

Researchers in the Kreyon project also empirically investigated other cultural systems like the IMDb Internet Movie Database as a “movie influence network” (Gravino et al. 2016, p. 116) with network nodes as movies and connections showing what movies have “influenced (e.g. homage, mentions, spoofs, etc.) subsequent movies” (ibid.). Monechi et al. (2017) looked into the creation of Twitter hashtags, the evolution of online code repositories like GitHub Archive, the creation of texts in Wikipedia and Gutenberg Corpus, and the listening of songs on Last.fm. In a discussion of this research, Cambray (2019) points to how findings in the Kreyon project “hint at a general model of the flow of **innovation** in

culture which might be explored through a network of the possible” (p. 64).

In relation to the adjacent possible, Monechi et al. (2017) discuss the important “two contrasting forces” when we interact with different environments: “the drive to explore the adjacent possible and the need to exploit the already known” (i.e., the actual) (p. 3). This means, finding a balance between “explore” and “exploit” becomes crucial.

In subsequent studies, researchers from the Kreyon project have looked also into **recommender systems** as platforms for presenting novel possibilities, e.g., in music recommendation. Gravino et al. (2019) discuss “novelty-driven recommender systems,” and find that the “interplay between the mechanism of **learning** and the restructuring of the adjacent possible space” seems to be very promising ingredients for the next generation of recommender systems (p. 9). Learning while exploring adjacent possibilities in recommender systems can help users gradually become more familiar with specific contents in a way that “progressively dislodges us from our **comfort zone**, but without pushing us too far” (p. 1).

Learning processes are also addressed by Jörg (2017) who uses the concept of the adjacent possible in relation to the Soviet psychologist Vygotsky’s concept of the “**zone of proximal development**” (ZPD) (► [Zone of Proximal Development](#)). ZPD deals with what next a person can learn with the help of others (► [Possible in Education](#)). Jörg underlines how Vygotsky’s “focus was not only process-oriented, but also very much possibility-oriented” (p. 30). In a similar vein, Cambray (2019) discusses adjacent possible developments of understandings, interpretations, and processes in **psychotherapy** sessions.

Hoelscher (2014) addresses “the adjacent possible and **artistic emergence**” in a proposed model for **artistic evolution** and change. Applied to art, “breakthroughs in the adjacent possible prompt the crystallization and dispersion of new styles and discourses” (p. 2).

Ruttonsha (2017) draws on the concept of the adjacent possible in relation to **design thinking** and “nuances of *what is*, *what could be* and *what*

should be” (p. 7). In this context, she points to the notion of “**design space**” defined as the “total set of prospective designs that could be rendered” (p. 17) (► [Possible in Design](#)).

The last research example here is a **semiotic** approach to the adjacent possible by Favareau (2015) examining “the creation of the relevant next” and how “living systems capture the power of the adjacent possible through sign use” (► [Semiotics](#)). Favareau sees the adjacent possible as an “**organizing principle** in nature” that shares much in common with the American philosopher **Charles S. Peirce**’s understanding of “a world of ongoing possibility [...] sculpted into its present state by its history of prior actualizations upon that possibility” (p. 591). Finally, in the context of **conversation analysis**, Favareau also recognizes the principles of the adjacent possible in “the moment to moment unfolding of **everyday communication**” (p. 590).

Discussion

The following discussion on the adjacent possible and relations to possibility studies deals with four essential aspects of the concept alluded to in the previous sections: (1) topologies of adjacent possibles, (2) types of adjacent possibles, (3) serendipity as actualization of adjacent possibles, and (4) designing for adjacent possibles.

Topologies of Adjacent Possibles

Topology can be defined as “the mathematics of context, connectivity and consistency” (Shields 2013, p. 104). In topology, shapes and spaces are studied with focus on how surfaces, volumes, boundaries, folds, holes, etc., interconnect with each other.

As earlier noted, the adjacent possible can be conceived as a space of nearby, available possibilities. This abstract space can be seen as a **topology of possibilities**, as a complex and dynamic network of interconnected and **interdependent possibilities**. An interesting question here is “how close or far the possible is from the actual” (Glăveanu 2018, p. 521). The concept of the “adjacent possible” deals with this

very question by focusing on close, nearby possibilities.

Topological approaches are present in several studies of the adjacent possible. For example, Loreto et al. (2016) view **evolution** as “a path in a complex space, physical, conceptual, biological, technological, whose structure and **topology** get continuously reshaped and expanded by the occurrence of the new” (p. 59), cf. Fig. 1. This is in line with Johnson (2010, p. 32) stating, “one way to think about the path of evolution is as a continual exploration of the adjacent possible.”

Topologies may enable movement for agents exploring along structural edges and connections. However, topologies also can limit and **constrain** movement, as not all parts of a topological structure may be easily reachable. Some parts are first reachable and encounterable when other steps have been taken. As noted by Hochberg et al. (2017, p. 9), “topological constraints exist and, as such, **innovation** is not (entirely) open-ended.”

Reachability across a network deals with how to reach from one node to another along intermediate paths. Such topological “**reachability structures**” (Björneborn 2006) also have to do with what is adjacent possible. “The adjacent possible holds what is potentially in reach” (Cambray 2019, p. 64).

Closely related to reachability structures are so-called “**small-world**” **network** aspects (Björneborn 2006). Small-world networks, like brains, social media, and many other complex, dynamic networks, are characterized by high clustering (short *local* distances) of network entities, in combination with shortcuts (short *global* distances) connecting otherwise distant entities. Small-world topologies provide short distances between, e.g., associative ideas in our brain, people on social media, or research papers in citation networks (ibid.). In this way, small-world aspects in topologies of possibilities may enable adjacent possible encounters to unfold.

When an agent explores the topology of possibilities accessible for this agent in a specific setting, cf. Fig. 1, new parts of the topology may turn up in the shape of new possibilities that could not be predicted (Prediction). As outlined before,

this **unpredictability** – this **unprestatability** – affecting **uncertainty** in human life (► **Uncertainty**) – of what is adjacent possible in a specific setting is a key feature of the topology of adjacent possible spaces.

However, the notion of the “adjacent possible” may invite prediction, trying to estimate what is adjacent and thus available, as can be seen in the previously mentioned *Kreyon* project in their mathematical modelling, e.g., in recommender systems. Nonetheless, as noted earlier, there is still an unpredictability/unprestatability that is strongly interweaved with how the topology of possibilities is constantly restructured and reconfigured as new possibilities are explored and actualized.

In this context, it is interesting to look at research in **temporal logic** including **branching time structures** in topologies of time. The first systematic discussion of branching time was presented in Prior (1967) and since elaborated in many scientific contributions. A recent important contribution is Rumberg (2019), who discusses “forking paths” in “**trees of possibilites**” (p. 145) with branches representing temporal alternatives and possibilities for the future.

In research on **creativity**, the topological notion of “**possibility spaces**” is used in a similar way as in research on the adjacent possible (► **Creativity**). “The work of any creative system can be viewed as a process of search through a space of possibilities or a ‘possibility space’” (Perkins 1995, p. 496).

In sociology exists the comparable topological concept of “**opportunity structures**” (Merton 1995). The concept points to “social distributions of resources” (Crothers 2004, p. 31). “Because it can be pushed and pulled by various social actors the ‘opportunity structure’ itself can change over time, often then altering the possibilities different people have for accessing resources” (ibid.). This **reconfigurability** of opportunity structures complies with the concept of the adjacent possible. Merton and Barber (2004) apply the concept of “opportunity structures” in relation to **serendipity**, noting, “microenvironments do differ in their opportunity structures for such serendipitous discoveries” (p. 297) (► **Serendipity**).

Possibility spaces and opportunity structures can be seen as adjacent possible layers of folds within folds, like crumpled paper (Björneborn 2006). Such “crumpled-up” **small-world** topologies enable adjacent possible encounters across dissimilar entities, also enabling **serendipity** as will be elaborated further below.

We often prefer and depend on paths we have used before. “As we go about our lives, in fact, we silently move along physical, conceptual, biological or technological spaces, mostly retracing well-worn paths, but every so often stepping somewhere new, and in the process, breaking through to a new piece of the space” (Tria et al. 2014, p. 6). In this context, so-called “**path dependency**” describes how “the set of decisions one faces currently are limited by the decisions one has made in the past, even though past circumstances may no longer be relevant.”¹ Exploiting existing paths may thus be easier than exploring new paths. This means, the present is “never a clean slate where we are free to make any decision,” instead history matters and the present is “**contingent** on how we got to this point” (ibid.). Path dependency is linked with the “exploit” element of the earlier mentioned “two contrasting forces” (Monechi et al. 2017) dealing with the tension between exploiting already actualized paths and exploring new possible paths. Hence, path dependency may **limit** what we perceive as adjacent possible and whether we find something potentially interesting by **serendipity**, as will be discussed further below.

Types of Adjacent Possibles

As alluded to in the introduction, the adjacent possible can be seen as **affordances**, i.e., “action possibilities” (Norman 1999) or “usage potentials” (Björneborn 2017), as relations between environmental and individual factors (► **Affordance**). In other words, the adjacent possible can be seen as capacities of an environment that can be met, actualized, by capabilities of agents in this environment.

¹ <https://systemsacademy.io/glossary/path-dependency/>

In the affordance approach to the adjacent possible, what is “adjacent” and what is “possible” depend on both external/environmental and internal/individual factors, meaning there are different **types** and **modalities** of adjacent possibles. Thus, something can be adjacent possible on different **parameters** and **levels**, e.g., individually, cognitively, collaboratively, socially, culturally, legally, politically, economically, technically, digitally, physically, and so on.

As implied above and stressed in the introduction, not all things are available and possible in all situations. Similar to the adjacent possible, an important aspect of affordances is the **constraints** they inflict upon agents in a specific setting (Norman 1999). These **limits of possibility** mean that not anything is possibly realizable and actualizable for agents with specific capabilities in settings with specific affordances.

A key aspect of the notion of the adjacent possible is precisely that it “captures both the **limits** and the **creative potential** of change and innovation” (Schoen et al. 2012, p. 3). In a similar vein, Testa (2009, p. 995) notes that the adjacent possible “sets limits to the accessible space.”

As earlier mentioned, something can be adjacent possible on a **collective** macro level as well as on an **individual** micro level. Monechi et al. (2017) consider “agents each exploring independently her own space of possibilities” (p. 10). When actualizing the adjacent possible on an individual level, what is “actual,” “adjacent,” and “possible,” respectively, is seen from each individual’s perspective, including individual experiences, abilities, and interests. What is actualized by one person may still only be adjacent possible but non-actualized for another person, or not available and “far-away” possible for yet others.

An example of disparate adjacent possibilities due to disparate individual capabilities can be found in the **fairy tale** of *Jack the Dullard* (or: *Clumsy Hans*) by Hans Christian Andersen. Jack the Dullard, the youngest brother of three, discovered adjacent possible resources – a dead crow, an old wooden shoe, and some wet clay – not noticed by his two brothers riding in advance

on the same route to the castle. Creatively actualizing, combining, and reconfiguring these adjacent possible resources helped Jack the Dullard to impress the princess to marry him.

On both individual and collective levels something can be internally and externally adjacent possible, including on the different parameters listed above: physically, digitally, economically, politically, etc.

Adjacent possibles can be accessible through **affordances** and **modalities** that are **physical/analogue** or **digital** (Modalities). Flows of people, interests, resources, and affordances may intersect in analogue and digital ways, actualizing what is adjacent possible. However, our physical **bodies** with their sensory-motor systems can actualize and experience adjacent possibles in physical environments not possible in digital ones. Conversely, digital environments, like hypertext structures on the **Web**, can give quicker access to information and contacts, than is possible in the physical world. Thus, physical and digital **access points** to adjacent possibles can supplement each other.

Finally, adjacent possibles can be actualized in both **convergent**, goal-directed, ways, and in **divergent**, exploratory, serendipitous ways, using terminology from Björneborn (2017) (► **Divergent Thinking**). For example, in **urban spaces**, **museums**, and **libraries**, we can find adjacent possible resources in both convergent and divergent ways, as enabled by **architecture** and **design** of those settings. This will be elaborated further below.

Serendipity as Actualization of Adjacent Possibles

“Engaging with the possible is a distinctively human way of living,” as stated on the webpage for the present Encyclopedia². Correspondingly, Glăveanu (2018, p. 519) talks about “engaging with the possible in the sense of both becoming aware of it and actively exploring it.” **Serendipity** deals with exactly this; “engaging with the

²<https://meteor.springer.com/possible>

possible,” in the sense of both becoming aware of possibilities and exploring them.

The concept of the adjacent possible can be used to understand how we serendipitously discover, explore, and learn from new “neighboring” things in all fields of life. Serendipity is an **actualization** of adjacent possible resources we find interesting but have not planned beforehand (► [Serendipity](#)). More precisely, serendipity happens when we in unplanned ways, as perceived from our individual perspectives, encounter resources (information, things, people, etc.) – as adjacent possibles – that we find interesting (Björneborn 2017).

Adjacent possible resources that may trigger serendipity come in the shape of ideas, information, people, objects, technologies, events, and countless other things that can provide **novelty** for specific individuals in specific settings (Imagination, Improvisation, Inspiration). For example, serendipity often plays an important role in disruptive **innovations** and **scientific discoveries** (Merton and Barber 2004). Serendipity also happens in **everyday life**, e.g., when we follow our **curiosity**, find new interesting information on social media, or stumble upon interesting people we had not planned to meet (► [Curiosity](#)). In this way, adjacent possible serendipity may open doors to new directions in our lives and influence **life courses** as we discover, explore, and actualize **life opportunities** (Life Course, Life Creativity, Possible in Human Development).

Serendipity transcends what is actual by exploring and exploiting possibilities. In the context of actuals and potentials, serendipity can be seen as a **contingency**, as something *not* inevitable, yet *not* impossible. In other words, serendipity is characterized by a contingent absence of **impossibility**.

Relating to previous discussions, serendipity deals with opening **topologies** of possibilities. Topologies of possibilities we can discover, explore, and actualize. We live and move in cognitive, social, physical, and digital landscapes full of adjacent possible serendipity. This means that at every moment on our paths in life, we are surrounded by adjacent possible opportunities

for serendipity. Opportunities we may discover or overlook.

The American journalist Max Lerner (1902–1992) wrote, “I am neither an optimist nor pessimist, but a **possibilist**.”³ In *Finnegan’s Wake*, the Irish author James Joyce (1882–1941) coined the word “**serendipitist**” (Merton and Barber 2004, p. 260). One may say “serendipitists” are “possibilists” making use of opportunities to be met in all kinds of situations. **Possibility-oriented** people may thus be **serendipity-prone**, as “serendipitists” use their “**sense of possibility**” (“Möglichkeitssinn”) as the Austrian author Robert Musil (1880–1942) called it in his book *The Man Without Qualities*.

Serendipity can be interest-driven, and **interest development** can be serendipity-driven. How **interests** emerge and evolve over time, e.g., for researchers or in everyday life, is affected by serendipitous encounters with adjacent possible people, objects, information, etc. When we actualize adjacent possibles, we pay interest to them, make use of them, and let them into our existence and interests.

In the context of **everyday life**, the notion of “**micro-serendipity**” (Bogers & Björneborn 2013) is relevant. Micro-serendipity deals with serendipitous experiences in micro settings of everyday life, like when we see fellow train commuters read something that triggers our **curiosity** and interests. Thus, micro-serendipity is about actualizing everyday adjacent possible “**little novelties**” (Tria et al. 2014; Loreto 2015).

Micro-serendipity inviting into adjacent possible walks in life could happen when we explore new cities by improvising walking routes not planned in detail beforehand. This may enable us spontaneously to find interesting objects, shops, buildings, people, etc. Each adjacent possible finding can change directions of the walk. Such an urban walk is an example of an adjacent possible **event chain**, with adjacent possibles leading to new adjacent possibles. One could here talk about “micro adjacencies”; small situations and

³ <https://www.nytimes.com/1992/06/06/arts/max-lerner-writer-89-is-dead-humanist-on-political-barricades.html>

events as **fractals** of adjacent possibles; as adjacent possibles *within* other adjacent possibles. Such “micro adjacencies” are constantly actualized through micro-serendipity in everyday life and could be related to **everyday creativity**, so-called “**little c**” **creativity** (Craft 2015).

As evident in previous sections, **innovation** and **creativity** are closely related to the adjacent possible (Innovation, Creativity, Creative Development). For instance, Loreto (2015) talks about “specific pathways through which creativity can emerge: e. g., recombination, exaptation, tinkering, serendipity, trial and error” (p. 2). The referred “**exaptation**” is a concept from evolutionary biology about reconfiguring and repurposing what is already available (Andriani 2017). For example, feathers had other functions in **evolution** before they were “exapted” in adjacent possible ways in the evolution of flying animals. The earlier mentioned example from the evolution of technology with the **invention** of WWW was about combining existing (known) technologies in novel (yet-to-be-known) ways, in a kind of exaptation (► **Invention**).

Serendipity is a close sibling to creativity and innovation. Serendipity, creativity, and innovation emerge at edges of the adjacent possible. These creative practices happen at edges of what we already know, i.e., is “actual” to us – when something we do not yet know becomes adjacent possible to us, i.e., literally becomes within our reach and triggers our curiosity and interests.

Serendipity is clearly related to **learning/scaffolding** processes (Education), as we only understand something new (yet-to-be-known) in relation to something we already understand (know). This means, new details to be learned must connect – in adjacent possible ways – to already known details. Learning – and serendipity – depends on previous knowledge. “Chance favors the prepared mind,” as stated by Pasteur (Merton and Barber 2004, p. 259).

Serendipity may help us open doors into what is adjacent possible for us. As *all* adjacent possible resources in life never can be noticed, nor predicted, cf. the earlier mentioned “**unprestatability**,” our ability for serendipity is important for discovering and actualizing what is potentially interesting for us. Hence, serendipity

plays a fundamental role in how we discover, explore, and learn new things – i.e., things that are adjacent possible – in all fields of life (Björneborn 2017).

Sheer **combinatorics** makes serendipity commonplace (► **Probabilistic Thinking**). As earlier noted, the world is constantly full of new adjacent possibles combinable and reconfigurable in innumerable and unprestatable ways. This unprestatable “**dimensionality**” of adjacent possibles – including the rich **diversity** of everyday “micro adjacencies” addressed above – explains why serendipity is a commonplace phenomenon (Diversity).

Designing for Adjacent Possibles

Where serendipity *grasps* possibilities, **design** *creates* possibilities. In continuation of previous discussions on topologies and types of adjacent possibles, including serendipity, it is interesting to look at how we can design for adjacent possibles (Possible in Design, Design Thinking). More specifically, how we can design **physical** and **digital** environments to function as individual and collective “**possibility spaces**,” so we more easily, serendipitously, and playfully can discover, explore, and actualize potentially interesting “adjacent” resources. That is, designing “possibility spaces” where our **interests** can be triggered, challenged, and developed.

How can we design for something that cannot be predicted? Of course, designing “possibility spaces” gives no guarantee for specific possibilities to be discovered and actualized. However, design can *enable* discoveries and actualizations.

According to Johnson (2010), “**innovative environments** are better at helping their inhabitants explore the adjacent possible” (p. 41). Björneborn’s (2017) framework on affordances for **serendipity** may be used to design environments that enable discovery and exploration of adjacent possibles (► **Affordance**). According to this framework, there are three key **affordances** for facilitating serendipity: *diversifiability*, *traversability*, and *sensoriability*, covering capacities of physical and digital environments to be diversified, traversed, and sensed. Designing for adjacent possibles may take into account these three key affordances. First,

the degree of *diversifiability*, i.e., how many different adjacent possibles there are in a given environment and how easily reconfigurable, i.e., easily diversifiable, is this environment? Second, the degree of *traversability*, i.e., how easy is it to access and navigate among adjacent possibles in a given environment? Third, the degree of *sensoriability*, i.e., how easy is it to discover and perceive adjacent possibles in a given environment?

Urban spaces, museums, and libraries are examples of designed environments that often have rich diversifiability, traversability, and sensoriability (Björneborn 2017). This means they are good possibility spaces for discovering and accessing adjacent possible resources like information, objects, people, etc. (Possible in Architecture). Urban spaces, museums, and libraries contain a multitude of adjacent possible resources waiting to be actualized by a multitude of people with a multitude of **interests** (Pluralism). As earlier noted, urban spaces, museums, and libraries also can help people to find and choose adjacent possible resources in both **convergent**, goal-directed ways, e.g., through signage, and **divergent**, exploratory ways, e.g., through serendipity and **play** (► [Play](#)). Design of digital recommender systems, addressed earlier, may profit from such combinations of convergent and divergent approaches, including the key affordances above and design elements that help users prioritize among discovered adjacent possibles.

Concluding Summary

Summing up, adjacent possibles are actual possibilities. They literally constitute what actually is possible for a specific entity with specific capabilities in a specific setting at a specific time. In contrast to more “far-away” and less accessible possibilities, adjacent possibles thus are possibilities that are available and ready-at-hand for a specific entity.

As outlined, the concept of “the adjacent possible” has found its way into a wide range of research fields, in particular during the last decade.

In the context of the present Encyclopedia, “the adjacent possible” can be seen as a key concept for a better understanding and awareness of manifold aspects in possibility studies that have been outlined in this entry:

- A better understanding of the **topologies** of actualizable but unprestatable possibilities constantly and dynamically emerging, evolving, and reconfiguring around us as adjacent possible resources.
- A better understanding of the **limits** of possibility; not anything is possibly actualizable for agents with specific capabilities in settings with specific **affordances**, i.e., capacities.
- A better understanding of different **types, levels, and modalities** of adjacent possibles: individually, collectively, physically, digitally, convergently, divergently, etc.
- A better understanding of **serendipity** as **actualization** of adjacent possibles when we discover, explore, and learn from encountering new adjacent possible resources in all fields of life.
- A better understanding of how we can **design** physical and digital environments to function as **possibility spaces** that can support us in discovering, exploring, and choosing adjacent possibles that can be actualized through curiosity, serendipity, creativity, play, interest development, etc.

Additionally, the concept of the “adjacent possible” *itself* might trigger new adjacent possible thinking and research development – like opening new doors to new rooms in Johnson’s aforementioned analogy of an expanding house of possibilities.

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Adoption

Tatiana A. M. Valério¹ and Maria C. D. P. Lyra²

¹Federal Institute of Pernambuco, Belo Jardim, Brazil

²Federal University of Pernambuco, Recife, Brazil

Abstract

Adoption is a noun form of the verb *adopt*, which comes from the Latin verb *adoptāre*, meaning “to choose for oneself.” We chose to define adoption as a way of becoming a parent and, more specifically, the so-called legal adoption. However, over time and in communities that are more isolated from the dominant collective culture, as in so-called traditional communities (e.g., indigenous, African-based, etc.), spontaneous adoptions occur, guided by community cultural practices, without any state intervention, and this phenomenon can be designated as the circulation of children, in which neighbors, relatives, and, at times, the entire community take care of that child or children in general. It is important to point out that all the ways of conceiving adoption depend on the dominant perspectives both on the child's place in society and on the relationship of adults to them. Thus, we emphasize that this concept is changeable over time and in emerging contexts. Legal adoption designates a way of becoming parents that is available for that purpose and under

the responsibility of the state. Adoption is a way of forming a family that is increasingly on the rise, having gained visibility in several countries in recent decades. Children and adolescents eligible for adoption are always victims of abandonment, neglect, psychological and physical abuse, and even wars or natural disasters. This modality of family construction is crossed by sociocultural and psychological aspects, both for the adoptees and the adopters. Legal adoption requires adopters not only show affection but compliance with the legal procedures required in each nation. In the broad sense, adoption defines the spontaneous acceptance of people, animals, social causes, etc., which can lead a person to always act in defense, or militancy, of what was adopted by him. We will address adoption to the studies of the possible as an alternative resulting from the dialogue established between the dominant and nondominant perspectives, in the context of building parenting.

Keywords

Adoption · Imagination · Perspectives · Possible

Introduction

People's life trajectories may have more or less expected phases. In adulthood, one of these phases is the experience of becoming a father and mother, regardless of sexual orientation or gender identity. But trajectories do not develop linearly. On the contrary, they are marked by disruptive events (Zittoun 2012) and this includes the impossibility of biologically generating the desired children, causing some people to consider others possibilities to get pregnant and give birth to a child. Sometimes, facing infertility, some people start considering adoption (Valério 2013) as one of the possibilities.

Mothering/fathering differs from motherhood/fatherhood (Cruz Pérez 2014) essentially because the first concepts are linked to the idea of the possible in the dynamics of being a father or mother, requiring no blood connection to

happen. That is, adoption appears in people's lives as a real and authentic possibility of parenting and filiation to be considered beyond pregnancy. Motherhood/fatherhood is a biological, physical process, based on blood ties, which unites parents and children, genetically. Some people are still unable to signify the possibility of becoming parents without blood ties. However, and due to the visibility that adoption has gained more and more all over the world (Riley and Van Vleet 2012), people have built new meanings in the face of the impossibility of generating their children biologically, ranging from different conceptual methods to adoption.

The idea of the possible (see section "The Possible in Psychology"), in a sociocultural and developmental approach, suggests that we are in worlds "infused by a sense of possibility, worlds that are open to alternatives and largely indeterminate futures" (Glăveanu 2021, p. 2). In adoption context, these different alternatives must be understood from different perspectives (see section ► "Perspective"), not only in the perspective of the social position of future adoptive father/mother, but also in the children and adolescents' perspective who wait in foster care institutions for their future adoptive parents.

Brief Adoption Considerations

Adoption is a sociocultural phenomenon that has occurred in all societies for a long time. In its most remote origins, adoption or similar cultural practices had an eminently private character, with little or no state intervention. In these dynamics, the will of the parties involved (donors of the child, intermediaries, and adoptive parents) prevailed and "the interests of adults were predominant, enduring in such molds for centuries and centuries" (Figueirêdo 2009, p. 149).

The first regulation that has history is in the Code of Hammurabi, King of Babylon (1728–1728 BC). It also appears in the Hindu Laws of Manu, written about 200 BC. In Greek and Roman societies, adoption was linked to religious beliefs, and to the need to worship the ancestors, so that the family would not be

extinguished (Bandeira 2001). "Perhaps the earliest known adoption is mentioned in the Bible, which describes the adoption of Moses by the Pharaoh's daughter" (Adamec and Miller 2007, p. xxi).

It is from Christianity, with the promise of life and eternal abodes in heaven, the fear of those who had no descendants was eliminated, and this diminished the practice of adoption at the time. In the Middle Ages, the Catholic Church created the Baby Hatch to welcome abandoned babies and guarantee the anonymity of the parents, in an attempt to reduce infanticides of the time. Adoptions remained low (Weber 2003). In the Modern Age, adoption was again accepted and, slowly, it started to be legislated through some norms – the codes promulgated by Cristiano V, in Denmark, in 1683; the Prussian, in Germany, in 1751; and the Codex Maximilianus, in Bavaria, in 1756. Adoption was only in fact again in the limelight after the French Revolution (1789), a movement strongly influenced by the Enlightenment principles of freedom, equality, and fraternity.

We find adoption also present in mythology (Oedipus, Hercules, Romulus, and Remus), in fiction (Oliver Twist, Superman, Spiderman, Harry Potter, Despicable Me, Kung Fu Panda, etc.), and even in books considered sacred (Bible: the adoption of Jesus Christ and Moses). This scope of adoption "is testimony to its existence in all places and times and to its ability to excite the imagination" (Novy 2004 in Palacios & Brodzinsky, 2010, p. 270).

Adoption as a cultural system, in the light of anthropology and sociology, when investigated in various societies, reflects the social structures, the process of organization of societies and the global processes that involve changes in family norms and in the construction of families. Adoption has been practiced and legislated in different ways over time, always mediated and regulated by cultural, social, political, economic, legal, and psychological aspects (Valério 2013). New demands for the adoption institute continue to emerge, such as, for example, homosexual couples who wish to adopt or the fight in defense of the rights of children and adolescents, who have become the focus of adoptions, inverting the secular logic that

adoption was, first of all, to meet the needs of unhappy people who could not have children.

The success of adoptions requires adequate preparation for both future parents, as well as the children and adolescents available for adoption, and post-adoption follow-up and support. Brazil has a successful experience regarding the preparation of applicants and post-adoption support for adoptive families: The almost 200 Adoption Support Groups (*GAAs*), formed essentially by adoptive families, applicants for adoption, and professionals in the areas of law, social work, psychology, and pedagogy, offer voluntary monthly meetings of psychological and socio-legal preparation, events, as well as face-to-face and virtual assistance and have helped countless families recently graduated from adoption. Also, it works to raise awareness in society on the issue of adoption, promoting the reframing of myths and beliefs (To learn more: www.angaad.org.br). This type of adoption-oriented service represents a space for reflection, in which prospective parents can consider multiple possibilities and challenges of adoption. In other words, this Brazilian initiative promotes the necessary conditions for society, especially future parents, to consider adoption with its specificities, as an authentic and legitimate form of parenting (Valério 2013; Valério and Lyra 2016).

Faced with the coexistence of contradictory messages, for and against adoption, circulating in the collective culture, those who decide to adopt face a feeling of ambivalence, as these messages, according to Valério and Lyra (2016), can play a central role in the construction of meanings on adoption, by claimants. In this process, people need to reflect on the different perspectives that are posed from different social positions.

Adoption and Its Relations with the Possible

When we talk about adoption, we cannot reduce this phenomenon to a single legal act of transferring family power to new parents. We are talking about experienced mourning, both by people who wish to adopt (mourning of not generated

children) and by children and adolescents who have lost or never had the protection of their parents. We also talk about future wishes and plans. Some applicants believe they can only adopt a newborn, girl, White, and healthy child. Andrei (2001) calls it “child of the fairies” (this idea is closely linked to the bad blood myth. The parents wish to adopt a pure child). This belief means prejudice against older, Black, not healthy children, and adolescents who are available to adoption but are doomed to stay in shelters by the adoption-dominant perspective.

Establishing theoretical relationships between the adoption institute and studies of the possible is to reflect on how to break with the dominant cultural form (becoming pregnant) of becoming a father and mother. Based on the theory of the possible, proposed by Vlad Glăveanu (2018a, 2018b, 2021), we started to broaden our understanding of the sociocultural dynamics of adoption. According to this same author (2021), when we relate to the world, in most cases, we act from culturally consolidated forms, we play the roles legitimized by society, and “we reinforce the sameness” (p. 2). Then, Glăveanu proposes that we adopt:

a different perspective from the one we (usually) hold. Exploring the “gap” between two (or more) perspectives on the same object or situation holds tremendous transformative and developmental potential. Most of all, it transforms the singularity of relating to the world, thinking and acting in a certain manner, into multiplicity. Becoming aware of the space created between two or more perspectives is a precondition for engaging with the possible. (p. 3)

Glăveanu (2021) advocates that imagining possible futures such as becoming parents requires a dialogical relationship between the self and others. From this dialogue between the position of future parents and the world (others), the person can access a world of alternatives, through imagination (see section ► “[Imagination](#)”), expanding possible futures, and not just being dominated by a perspective from a socially dominant position – in this case, to be a parent, the mother must become pregnant. Therefore, in this dynamic, people must be able to perceive different perspectives and start to consider them together,

making them dialogue with each other. One possible way to start considering adoption – non-blood ties perspective – is through participation in adoption support groups (*GAAs*), and meeting adoptive families and even studying the topic. In this way, adoption will become a possible alternative, just as the blood ties perspective.

This evokes an ethical dimension of what is possible for adoption, that is, the possibilities of becoming a father/mother by biological means (becoming pregnant, drug treatments, surrogacy, artificial insemination, in vitro reproduction, etc.) are no longer in a power relationship, where they are validated as authentic and superior, and adoption – characterized as a form of affiliation based on affection and unrelated to biological ties – starts to be among the possible forms of becoming a parent, not being considered of less value and shrouded in myths and prejudices.

Finally, we highlight that the emergence of the possibility arises from the gap between different positions and perspectives that are placed in the collective culture in a given time-space. For example, the act of stealing a child to adopt is not considered a possibility. Thus, examining the possibilities mentioned above – the biological pathway and the path of adoption – we can see that the choice made by people is dynamically related to the perspectives of the meaning that this adoption plays for each one. We call these possible paths that exist in society as avenues of directive meaning – ADM (Lyra et al. 2018) – that expand or limit the diversity of perspectives built by each person in the face of adoption. This aspect related to the different perspectives of the possible highlights the relationship between the person (the adopter) and the meanings that hover in society.

From the Dominant to the Nondominant Perspective in the Sociocultural Construction of Parenting

In a survey carried out by Valério (2013) on the decision to adopt legally, heterosexual couples pointed to pregnancy as the first perspective

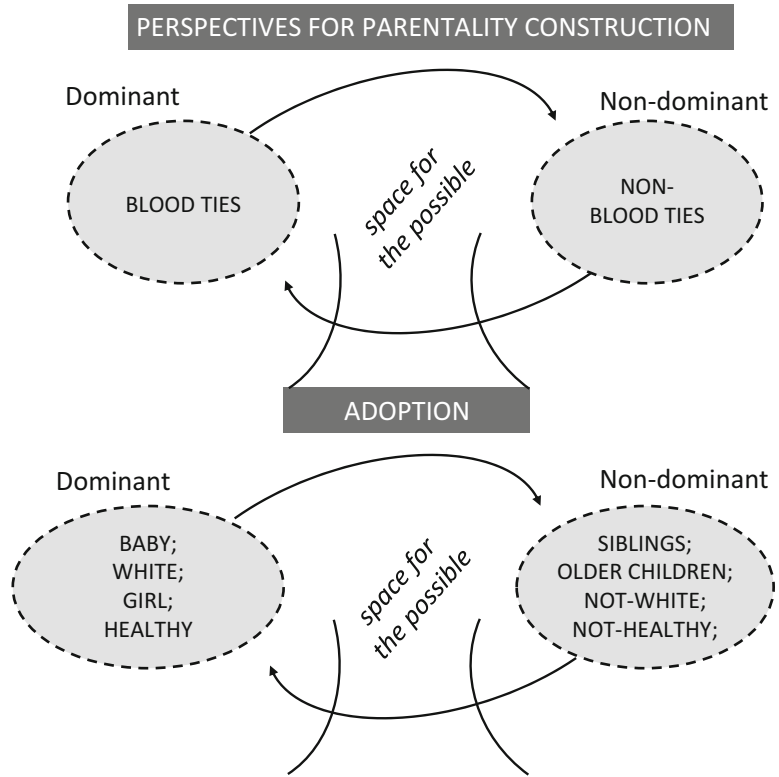
considered when they wished to have children. This finding corroborates studies in the area that point to the impossibility of giving birth to a child, as the main motivation for adoption. We need to highlight in these studies that adoption, for those who cannot get pregnant, is the last option considered, most of the time. People desperately fixate on blood ties perspectives, and that has a *raison d'être*. Blood ties were and are extolled in different cultures, legitimizing the hegemonic blood tie perspective. To illustrate the repercussions of this thought, we see the quote from a person who was unable to conceive, with failed attempts at artificial insemination and who did not yet consider adoption:

Sarah: There are also people who advise us to adopt as if adoption were, you know, a consolation prize. And it is not just from this angle that we would like to adopt. 'Ah, you can't get pregnant, so ... adopt.' [...] I understand their point of view, since they see our desire, and they want us to be happy, so they try and find a solution right away. (Valério and Ferreira-Novaes 2018)

The above quote, present in the study by Valério and Ferreira-Novaes (2018) on the construction-destruction semiosis of hierarchical systems, emphasizing preserved traces of destroyed signs (valuation of genetic affiliation) in the emergence of the transition toward the decision to adopt and the creation of a new sign (adoptive filiation being feasible), reveals how the process of deciding to adopt is enveloped by signs present in the collective culture that regulate this dynamic in the construction of parenting. Sarah's position reinforces the blood ties perspective by constructing her meaning about adoption.

The Relational Dynamics Between Perspectives

When deciding to have children, as already discussed above, the first idea that comes to mind, mostly, is to get pregnant, is to follow the social script, what is expected and culturally agreed. For adoption to enter the scene, it is necessary that another perspective, in addition to the blood ties, starts to figure in the possibilities of

Adoption,**Fig. 1** Perspective for parentality construction: blood ties X non-blood ties

building parenting, so that it is not understood by future parents, as the last option. It is necessary to understand the transformative importance that the studies of the possible bring to the social reality not only of future parents but, mainly, of institutionalized children and adolescents.

Sávio Bittencourt (2010), then a public prosecutor in Rio de Janeiro, Brazil, stated that biology justifies inertia and kills childhoods. This strong position of the prosecutor and father by adoption, alerted to the defense of the dominant perspective by social actors of the Brazilian reception system, also highlighted the role of childhood judges. For him, insisting several times on the child's return to his biological family, because children should remain with their blood families, results in long periods of stay in welcoming institutions, depriving them of the affection and security of a family, for example. Several Brazilian judges and legislators, awakened to this problem, have recently limited the time given to the child protection network to carry out various actions, for example, the removal of family power – an action that precedes

the insertion of children and adolescents in the that country's national adoption system.

The emergence of a new perspective is quite complex, mainly because it normally comes from a space of resistance (Glăveanu 2018b). It is not our intention to discuss this phenomenon here but to highlight the developmental dynamics involved in the sociocultural theory of the possible. See Fig. 1, below:

Describing Fig. 1, we start with the proposal of two divergent perspectives in the dynamics of the construction of parenting. The dominant perspective, we call blood ties, encapsulates all forms of parenting and affiliation that maintain blood ties in family tradition. In opposition to biologism, we propose the non-blood ties perspective that is nondominant in the context presented. These different possibilities coexist in the construction of imagined parenting, that is, in the construction of a possible future. By dialogically exploring the space between these different perspectives, we explore the reality on a given theme (for example, becoming a father/mother),

adapting us to the physical world in which we live, and, at the same time, allow us to think and act within it based on a perception of not only how things are but how they could be, will be, and could never be. (Glăveanu 2021, p. 56)

We observe that adoption emerges as an alternative resulting from the dialogue established between the dominant and nondominant perspectives, in the context of building parenting. Illustrating this dynamic, consider that someone who wants to be a mother or father has not even considered any possibility other than pregnancy. But that person cannot get pregnant, so he faces a dilemma. What to do? The possibilities by the collective culture range from drug treatments, assisted reproduction, and adoption, but the last one figures, mostly, as the last possibility or as a nonpossibility of choice. There must be at least two different perspectives for the person to reflect on other possibilities for the future and, subsequently, to choose what to do. This dynamic characterizes the agency (Glăveanu 2021) highlighted by the theory of the possible. Through the imaginative process, the person expands his experience (Zittoun and Cerchia 2013) of the here and now, starts to share other realities by accessing past experiences (lived by him or others), and also imagining possible futures (Zittoun and Gillespie 2016).

Returning to Sarah, after recognizing their infertility and inability to conceive, she and her husband expand their experience, moving away from the here and now and starting to consider new possibilities and begin a process of choosing for adoption:

Sarah: I think, of the two of us, I resisted a lot more, because of ... fulfillment, for being a woman, and everything else ... But from the moment I realized that he was open to adoption, I started opening up too. And my previous way of thinking: "I'm not adopting right now, I'm not going to think about adoption" because people would think: "Oh, she couldn't get pregnant, so she adopted" to ... 'make up for it' ... No, I changed my mind ... I don't even want to know what people are or aren't thinking! [laughs] Let them think what they want I ... What I want today is ... to find, embrace a child whom I will love with all my heart ... [both get emotional]. (Valério and Ferreira-Novaes 2018, p. 92)

In this dynamic, as shown in Fig. 1, the choice made – adoption – also presents different

perspectives. The first perspective presents what is still dominant, about the profiles that Brazilian applicants for adoption want: newborns, White children, girls, and healthy (child of the fairies). Nondominant perspectives – gathered here in Fig. 1, in the non-blood ties perspective – collaborate so that the person can engage in a perspective-making process, that is, to consider different possibilities. This psychological and cultural process occurs from the initiative of putting in the position of the other – in this specific case, it can be both people who have already adopted this dominant view, adopting groups of siblings, older children, teenagers, and unhealthy children, for example, but also from the position of children and adolescents waiting to be adopted. Here are the developmental dynamics in the process shown in Fig. 1. With each choice, or perspective taken, made (adoption) after the dialogue established between different perspectives (blood ties, non-blood ties). According to Glăveanu (2021), a new space of possibility is formed (adoption: dominant, non-dominant) and, therefore, the same sociocultural and semiotic process will occur.

Conclusion

In the relationship between the studies of the possible and the adoption, we observed that the diversity of perspectives, in the first place, contributes to reflection and practical solutions concerning the needs of children and adolescents available for adoption. Adoption, when it takes into account the position of the other, requires that we consider not only the wish of the suitors (they usually imagine a way of replicating what biology has denied them and wish to adopt a newborn), but that possibilities pass appear together, with nondominant perspectives also considered. The others, that is, children and adolescents to be adopted, are now seen and considered in this dynamics. Always making it possible to open up to different perspectives allows the emergence of new unimagined possibilities. Cultivating spaces between different perspectives on adoption opens up just the possibility in which the new can emerge.

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Adversity

Katrina Ginis, Sandra Stewart and
Leonie Kronborg
Monash University, Melbourne, VIC, Australia

Keywords

Adversity · Suffering · Artistic creativity ·
Posttraumatic growth · Possibility

Definition

Throughout time, experiences of adversity and suffering have been associated with creativity, particularly that of an artistic nature. This dynamic has also been the subject of considerable scientific inquiry. The archetype of the “tortured artist” is ubiquitous as is the notion that great art is born out of adversity. There is evidence to suggest that creativity can arise following traumatic events and that experiences of adversity can inspire and provide source material for the creation of art. Additionally, experiences which challenge preconceptions can engender alterations at a neural level and bring new creative possibilities to fruition. The romanticization of suffering is however problematic, and it should not be suggested that physical and psychological distress are desirable prerequisites for creativity. Indeed, positive experiences can also be creatively transformative. Nevertheless, as suffering is a universal experience, it is important to better understand the

mechanisms and contributory factors which allow individuals not only to recover but grow creatively in the aftermath of painful and traumatic events. Cultivating such understandings may provide a sense of hope and comfort as well as enabling creative development and the expansion of human possibility following adversity.

Introduction

Associations between experiences of adversity and creativity have been prevalent throughout history and the subject of extensive scientific investigation. The notion that ascension can occur through suffering is metaphorically exemplified by the mythical phoenix rising from the ashes. Creativity may be defined as the generation of novel and useful ideas or products (Sternberg 2006). Many accounts of the challenges endured by creative individuals suggest that they can use challenging experiences as sources of inspiration and motivation for their work. The “art born of adversity” troupe is ubiquitous, and many plays, films, pieces of music, and works of visual art may be interpreted as attempts to find meaning in suffering (Sandholm-Bark 2020). Through creating art, human beings seek to make sense of incomprehensible tragedies, which are an inevitable part of life (Ghadirian 2009). The individual and collective quest to understand the darker aspects of existence can manifest in acts of creativity and give rise to previously unimagined possibilities.

This entry will explore the relationship between experiences of adversity and artistic creativity. It will discuss empirical evidence for this association and outline relevant theoretical frameworks. The detrimental effects of adversity on creativity will also be considered as will the notion that positive experiences may be transformative. Underlying mechanisms and determinants, including personal factors which may contribute to the phenomenon of adversity leading to creativity, will also be examined. Additionally, the interrelationship of creative engagement and personal development in the aftermath of trauma will be discussed.

Detrimental Effects of Adverse Experiences on Creativity

Adversity may present new opportunities for creative possibility, such experiences should not be romanticized. They can be painful, psychologically traumatic, and have detrimental long-term effects. For example, exposure to childhood adversity (e.g., abuse, neglect, etc.) has been associated with multiple medical and psychiatric problems (Felitti and Anda 2010; Herzog and Schmahl 2018) as well as increased morbidity and mortality (Merrick et al. 2019). Even resilient people who are exposed to trauma show heightened cardiovascular reactivity to trauma reminders (Tucker et al. 2007) and greater vulnerability to PTSD with subsequent trauma exposure (Bremner et al. 1993). They may also experience cognitive decline (Stein et al. 2002), altered catecholamine levels (Otte et al. 2005; Young and Breslau 2004), more chronic illness later in life, and decreased mean life expectancy (McFarlane 1997). In support of the long-term ill-effects of adversity, a meta-analysis of 161 studies of 81,866 refugees and other conflict-affected people (e.g., asylum seekers, veterans etc.) internationally found that the mean prevalence of PTSD was 30.6% (Steel et al. 2009). Rather than being ideal for the cultivation of creativity, such conditions can engender considerable disability and incapacitation.

The ubiquitous myth of the “tortured artist” implies that suffering (mental and/or physical) is a prerequisite for creativity; however, this premise is contentious in the literature and is best regarded with skepticism (Akiskal and Akiskal 2007). It aligns with the Nietzschean notion “That which does not kill us makes us stronger,” which has become deeply ingrained in the cultural imagination and entered common parlance. Such stereotypes are damaging as they negate the depth of suffering and distort the reality of lived experiences (Silvia and Kaufman 2010; Weston and Imas 2018). Moreover, the notion that hardship is “character-building” may simply be attributable to the human need to ease suffering by rationalizing it and cultivating positive illusions (McFarland and Alvaro 2000). The objective of

this chapter is not to ennoble suffering or present it as a desirable precondition for creativity, but to impart that adversity is not necessarily hopeless and can present unexpected creative possibilities (Eggerman and Panter-Brick 2010; Kleist and Jansen 2016).

Evidence of a Relationship Between Experiences of Adversity and Creativity Possibility

While experiences of trauma and adversity may not be desirable, many people show remarkable resilience and can even thrive in the aftermath of traumatic events; indeed, most trauma survivors do not develop PTSD, and up to 70% report positive psychological growth (Linley and Joseph 2004). The term “posttraumatic growth” (PTG), defined as the positive psychological change that is experienced due to the struggle with highly challenging life circumstances, is now widely used to describe this phenomenon (Henson et al. 2021). Five domains of growth have been described, namely: appreciation of life; relating to others; personal strength; new possibilities; and spiritual growth (Taku et al. 2008). Importantly, heightened creativity is one possible impact of growth in these domains.

Biographic and historiometric literature also indicates a relationship between adversity and enhanced creativity. Adverse experiences are a recurrent theme in biographies of eminent creative individuals. For example, many artists with mental illness have had emotionally tumultuous childhoods which are explored in their artistic works (Ludwig 1992). A further ubiquitously referenced example is the work of artist Frida Kahlo which reflects her lived experiences of chronic pain, loss, and disability throughout her life (Conaty 2015). People pursuing creative work (especially in artistic fields) tend to report higher than average incidence of challenging life circumstances, including adverse life events (Simonton 2014) and psychological disorders (Andreasen 2008; Jamison 1993; Johnson et al. 2012; Ludwig 1992). Such findings parallel those of Zausner (1998) who conducted a qualitative analysis of biographies of eminent

artists suffering physical illness. Findings were that experiences of adversity provoked disequilibrium and necessitated alternative means be found to fulfill creative ambitions. This conceptualization also aligns with the ancient association between creativity and physical stress which has been termed “creative illness” (Ellenberger 1970). For example, the stress of a cultural initiation is thought to engender profound psychological changes and ascension to a higher level of functioning (Zausner 1998).

The relationship between adversity and creativity is not limited to eminent individuals, as demonstrated by Forgeard (2013) who examined the impact of adverse life experiences (e.g., disaster, illness, accidents, and assault) in the general population in the United States ($n = 373$). Findings indicated the number of adverse life events predicted self-perceived creative growth as well as breadth of creativity. These findings are aligned with those from an exploratory pilot study focused on a Rwandan sample ($N = 100$) of genocide survivors (Blackie et al. 2015). People seeking mental health services were asked to indicate the extent to which they perceived that their creativity had increased since the genocide. Moderate increases were reported by 25% of participants. Notably, about half referenced music or singing, with the remaining references including creative writing, poetry, dancing, crafts, artisan skills, and increased ability to generate new ideas or projects.

The concept of “adversity capital” offers a way to think about how individuals gain agency and sustain themselves despite ongoing hardship (Walsh 2016). Disadvantaged communities can be highly creative in surviving precarious conditions (e.g., entrepreneurial practices following the global financial crisis) (Garcia-Lorenzo et al. 2018). The poor and marginalized can use creative survival tactics to navigate challenging situations (e.g., poverty, war, climate change, etc.) to actualize opportunities and exploit resources (Jones et al. 2010; Vigh 2010). Equally, disenfranchised communities can subvert oppressive forces through practices of resistance, including the creation of art (Imas and Weston 2016). For some, artistic creativity can be a means of overcoming

marginalization and communicating the pain associated with it (Csikszentmihalyi et al. 2018).

The historical archive also provides evidence for the notion that creative possibilities arise from adversity. Difficult periods including wars, political protests, and global pandemics have led to cultural turning points where artists have been at the forefront of change. Following times of upheaval, the arts have not only survived, but flourished. The Renaissance is a powerful example of this. During the fourteenth century, the bubonic plague swept across Europe, killing at least one third of the population (Ziegler 2013). This human tragedy also engendered socio-economic, cultural, political, scientific, technological, and religious changes and contributed to one of the greatest epochs for art, architecture, and literature in human history (Burckhardt and Middlemore 2019). Confrontation with mortality engendered an appreciation of the finitude of existence and a desire to enjoy life's pleasures. Many people sought solace in art and literature and members of the elite became patrons of the arts. The rediscovery of classicism and the increased secularization of society during this time were also reflected in conceptual and aesthetic shifts in artworks that were created (Paoletti and Radke 2005). This is exemplified by masterpieces such as Botticelli's *Primavera* (c.1470-1480) and *The Birth of Venus* (c. 1484-1486) and Da Vinci's *Mona Lisa* (c. 1503-1506). Thus, after the initial horrors of the plague, Italian society became richer than before.

A certain amount of stress can be beneficial to creative productivity at a more mundane level. Those in many creative professions continuously face constraints, and some even argue their creativity manifests in coping with external pressures (Glück et al. 2002). For example, the pressure of having to meet an exhibition deadline may motivate an artist to finish a particular body of work. The imposition of external constraints may elicit an optimal level of physiological arousal and in so doing enhance creative performance. Support for this idea comes from organizational psychology research suggesting an inverted U-shaped relationship between time constraints and creativity (Baer and Oldham 2006).

Evidence presented in this section collectively suggests an intimate connection between experiences of adversity and creativity on personal and collective levels. It indicates that negative experiences can be channeled into creative survival strategies as well as artistic expression. For both individuals and societies, creativity can become an act of turning challenge into opportunity.

Theories and Mechanisms

Theoretical models have been developed to explain how creative possibility can arise in the aftermath of adversity. Four relevant and comprehensive models will be discussed. Two of these models raise questions as to whether the relationship between creativity and adversity is genuine or illusory. First, Cognitive Adaptation Theory proposes that individuals faced with threatening events cope by developing and maintaining self-enhancing illusions or narratives of personal growth that do not, in fact, relate to verifiable positive changes (Taylor 1983). Second, and conversely, Organismic Valuing Theory proposes that human beings have an innate tendency to integrate adverse experiences into a unified sense of self, and through this process, genuine growth occurs (Joseph and Linley 2005).

Assumptive World Theory also proposes that adverse experiences can shatter individuals' beliefs about the benevolence and controllable nature of the world (Tedeschi and Calhoun 2004). Additionally, they instigate the reexamination of core beliefs, hopes, and aspirations and can be conceptualized as metaphorical earthquakes (Cann et al. 2010; Janoff-Bulman and McPherson Frantz 1997). According to Assumptive World Theory, adversity instigates "psychologically seismic" restructuring that is necessary for growth (Tedeschi and Calhoun 2004). People make sense of their experiences through the cognitive integration of new information which allows the modification of preconceptions. Recovery therefore does not equate to returning to an earlier way of being but rather establishing a new assumptive world that incorporates the traumatic experience.

Zoellner and Maercker (2006) have advocated a two-component model which accounts for discrepancies between the actual and illusory models of growth in the aftermath of adversity. According to this model, PTG has both constructive and illusory aspects. It posits that a transiently distorted perception of growth initially buffers the effects of a stressful event soon after it occurs. Illusory growth is thought to decrease with time if actual PTG is not experienced, whereas actual PTG increases or remains consistently high with time. Thus, both actual and illusory models contribute to understandings of how the phenomenon of creative growth in the aftermath of adversity may occur.

A possible mechanism underlying the relationship between adversity and creativity as manifestation of PTG is that of neuroplasticity (Ord et al. 2020). Neuroplasticity is understood as experience-driven, time sensitive, and influenced by environment and internal states, such as motivation and attention (Ruge et al. 2012). Neuroplasticity is thought to be responsible for the functional and structural changes in the brain accompanying PTG. For example, neuroimaging has identified positive associations between PTG and increased gray matter volume in the right prefrontal cortex (rPFC) and higher resting activity in the central executive network (CEN) (Fujisawa et al. 2015; Nakagawa et al. 2016).

Alterations in neural connectivity may allow new ideas and associations to be formed which may in turn inform artistic creativity. Imaging studies indicate potential overlap between brain regions associated with PTG and those involved with creative cognition and behavior. For example, the CEN is thought to play an important role in artistic creativity (Beatty et al. 2015). Moreover, studies on artistic creativity support the role of the rPFC and parietal cortical regions in visuospatial perception and processing (Bhattacharya and Petsche 2002; Ng et al. 2001).

Creative engagement may also support PTG and constitute a form of “neuroenhancement” in the aftermath of trauma (Garrett 2020). The brain has the potential to change in a positive way through exposure to creative activities. Lusebrink

(2010) found that the arts play an integral role in activating specific neural structures such as the occipital lobe and basal ganglia, along the limbic regions and sensory areas of the cerebral cortex. The capacity of artmaking to foster neuroplasticity may be partially attributable to the wide range of novelty exposure available. Lusebrink stated, “An expression through art media can also originate from complex cognitive activity involving decisions and internal imagery, thus activating the sensory channels and motor activity” (Lusebrink 2004, p. 192). For example, with painting alone there are endless possibilities in relation to how media can be used to facilitate different forms of expression, which result in the activation of “sensory channels” and innovative ways of thinking (Lusebrink 2004). Thus, creativity and cognitive adaptability cultivated through artistic engagement may enable experiences of adversity to be coped with in a more adaptive manner.

Contributory Personal Factors

Questions remain about how, and for whom, adversity can lead to the augmentation of creative possibility. Factors including personality may play a role in determining whether an individual might grow and/or deteriorate following adversity. Indeed, the trait of openness to experience, which is a predictor of creative thinking and achievement (Kaufman 2013; Silvia et al. 2009), also predicts the identification of new possibilities for one’s life, and perceptions of increased personal strength (Christensen 2020; Tominaga et al. 2020). Increased openness to experience may therefore allow trauma survivors to think more creatively about future opportunities for growth. In addition, an increased sense of personal strength may promote feelings of initiative that is beneficial to creativity, or, alternatively, creative engagement may enable mastery, thereby increasing self-efficacy and self-esteem (Zausner 1998).

Personal characteristics, such as sensitivity, may predispose individuals to experiencing

creative growth in the aftermath of adversity. For example, those with sensory processing sensitivity (SPS; Aron and Aron 1997), a biological predisposition involving deep processing of stimuli, which leads to overarousal, intense emotions, and heightened physical sensitivities, has been found to be more susceptible to experiencing post-traumatic stress (Booth et al. 2015; Grinapol et al. 2022). They may also, however, be more inclined to experience PTG (Gilbert 2021).

Cognitive processing and the capacity for exploring thoughts and feelings surrounding an event are also key factors which allow adversity to be turned into advantage (Caspari et al. 2017). Negative psychological coping strategies (e.g., regret, upward comparison to others, etc.) have been positively correlated with posttraumatic stress severity, while positive strategies (e.g., acceptance and resolution) have been negatively related to posttraumatic stress severity, but positively to PTG (Ogińska-Bulik and Michalska 2021).

Having time to reflect on and process stressful or painful experiences may also impact creative growth (Cox and McAdams 2014). Though psychological and physical suffering can be creatively detrimental when experienced, perceptual shifts and creative development can occur when conditions can be managed or overcome, and retrospective reflection can occur (Forgeard 2013). For example, those who achieve creative eminence in their fields do not operate optimally when experiencing severe mental illness (Andreasen 2008; Rothenberg 2006). Periods of creative productivity tend to arise when individuals are either transitioning out of or between depressive episodes as opposed to during acute psychological distress (Andreasen 2008; Jamison 1989). Such findings highlight the importance of having distance from experiences of adversity, for creativity to flourish as a manifestation of PTG.

The type of rumination engaged in following a traumatic experience also appears influential. According to Assumptive World Theory (Tedeschi and Calhoun 2004), individuals engage in two forms of rumination following experiences of adversity. *Intrusive rumination* refers to the

occurrence of unwanted thoughts related to the event, whereas *deliberate rumination* refers to purposeful thinking about the implications of the event. Intrusive rumination predicts higher levels of distress (Taku et al. 2008) whereas deliberate rumination predicts growth (Calhoun et al. 2010; Cann et al. 2010). Intrusive rumination has also been associated with a decline in all five domains of growth (appreciation of life; relating to others; personal strength; new possibilities; and spiritual growth) while deliberate rumination has been found to lead to an increase in all five domains (Forgeard 2013). Long-term growth may therefore follow or coincide with distressing experiences and be facilitated by activities which minimize intrusive rumination – such as creative engagement which can focus attention away from personal suffering.

Adverse experiences may also provide source material, ideas, and inspiration for the realization of creative projects. For example, many artists use their work to express their emotions (Blok 2017). Some have even used their own bodies and physiological experience as source material for creative projects (e.g., *Heart* (2014) by Lisa Roet which uses echocardiogram and MRI footage of the artist's own heart). The creation of art can enable traumatic experiences to be contemplated, processed, and expressed. By engaging in creative work, people can heal and grow from the challenges that have befallen them. Such creative callings motivated by past adverse experiences may therefore constitute a form of “survivor mission” (Eskreis-Winkler et al. 2014). Experiences of adversity can also expand the scope of possibility for artistic creativity indirectly. Even if such experiences are not directly represented, they can engender the cultivation of empathy, emotional depth, and perspicacity which can in turn lead to more sophisticated works of art.

The evidence presented in this section highlights individual differences in the extent to which trauma leads to creativity. An important future line of research is to understand more comprehensively the breadth of environmental and personal factors that determine which individuals turn adversity into creativity, and how this occurs.

Facilitating Possibility Through Creativity in the Aftermath of Adversity

Nurturing creativity can help people understand, overcome, and grow from adversity (Kaufman and Gregoire 2015). Creative engagement confers benefits for physical and psychological well-being (McFadden and Basting 2010; Stuckey and Nobel 2010). It can increase flow, catharsis, distraction, positive emotions, and meaning making. Creative immersion, and the attainment of a flow state, can be emancipatory, providing a refuge and means to overcome physical and psychological pain (Csikszentmihalyi et al. 2018).

Imaginative aspects of artistic practice can augment coping strategies that promote adaptive resilience and enhance psychological wellbeing (Thomson and Jaque 2019). Expressive art therapy practices use the creation of visual art to facilitate cognitive processing of traumatic events and alleviate distress (Chiang et al. 2019). Engagement with literary, visual, and the performing arts can be reparative in the face of traumatic exposure, and provide opportunities to find meaning, bring order into emotional chaos, and regain a sense of control (Forgeard 2013; Richman 2014).

Given that creativity in the wake of adversity has been associated with introspective reflection and deliberate rumination, it may also be beneficial to support these processes using psychotherapeutic approaches. For example, Metzl and Morrell (2008) position creative thinking as a characteristic that can be taught and developed to enhance resilience following adversity to increase life satisfaction and reduce clinical distress. Similarly, Hunter (2001) suggests that it may be helpful to view adversity as a challenge that can be overcome through being creatively courageous. Thus, collectively, the existing literature suggests creativity may constitute both a manifestation of and means to attain PTG.

Positive Experiences and Creative Possibility

This chapter has highlighted that adversity can engender creative growth, and the PTG model

focuses on the potential positive changes following highly stressful experiences. However, research indicating that creativity can also be fostered through positive emotional experiences should be acknowledged. The idea that positive emotions are possible catalysts for growth has been explored by different theoretical frameworks in recent years, including the broaden-and-build theory (Fredrickson 2001) and the “inspire-and-rewire” hypothesis (Keltner and Haidt 2003). Fredrickson’s (2004) “broaden-and-build” theory contends that positive emotions broaden awareness, enhance neural connectivity, and encourage original thoughts and actions. The complex emotion of awe, for example, has been associated with moments of personal change (Schneider 2009; Chirico 2020). It is proposed that being confronted with extraordinary vastness challenges and expands individuals’ mental frames (Chirico et al. 2018; Silvia et al. 2015) and in so doing helps them find new connections among objects and ideas. Experiences of awe may therefore be related to creative thinking and behavior (Chirico et al. 2018).

A parallel concept to PTG is the postecstatic growth model which explores the positive psychological changes after emotional peak experiences such as love, joy, and awe (Roepke 2013). Postecstatic growth is thought to occur in specific areas, namely spirituality, meaning, social relationships, and self-esteem. Considering the overlap between these perceived benefits and the positive psychological effects that can follow highly stressful events, PTG and postecstatic growth may be similar processes (Mangelsdorf and Eid 2015). Therefore, those who are more likely to experience PTG may also be more likely to experience postecstatic growth and vice versa. Meta-analytic findings from 122 longitudinal studies (Mangelsdorf et al. 2019) showed increases in self-esteem, positive relationships, and mastery after both positive and negative events. Furthermore, there was no evidence that negative life events have stronger effects than positive ones, indicating that people tend to experience psychological gains in the aftermath of impactful experiences irrespective of their emotional

valence. Similarly, Forgeard (2013) found that both decreases and increases in interpersonal relationships can lead to heightened self-perceptions of creativity. Taken together, these findings demonstrate that both positive and negative interpersonal events can provide rich raw material for creative works, especially in artistic domains.

Hence, creativity may not only arise in the aftermath of adversity but also following positive transformative experiences which result in existing schemas being challenged. The key element influencing growth appears not to be the emotional valence of the experience but rather its intensity and capacity to shift preexisting perceptions and understandings of oneself and the world.

Conclusion

This chapter has explored the association between experiences of adversity and creative possibility with reference to extant literature, theoretical frameworks, and mechanisms which may underpin the relationship. It has also highlighted the influence of personal factors in determining whether adversity is transformed into creativity. Additionally, evidence has been presented to suggest that creativity can be both an outcome of and means to attain PTG. The findings of the existing research do not romanticize suffering as a desirable prerequisite for creativity. Indeed, it is important to acknowledge that diverse experiences can function as an impetus for creative inspiration and expression – including those associated with emotions such as love, joy, and awe.

The findings presented in this chapter have broad implications, given that most people will experience adversity at some point in their lives. Understanding that suffering and trauma can be catalysts for healing, growth, and creative flourishing may provide a sense of comfort and allow the future to be approached with optimism. In the wake of trying times, many people could learn to thrive, and possibly reach creative heights they never thought possible.

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Aesthetics

Maddalena Mazzocut-Mis
Università degli Studi, Milan, Italy

Abstract

Aesthetics is a philosophical discipline whose modern roots can be traced back to the first half of the eighteenth century, when Alexander Gottlieb Baumgarten thus named the “science of sensible knowledge,” forming a noun out of the Greek adjective *aisthetike*. He focused on the problem of sensation, recognizing that Aesthetics much be considered as its own specific field of inquiry whose laws can be recognized and, indeed, described (Baumgarten, *Meditationes philosophicae de nonnullis ad poema pertinentibus*. Halae Magdeburgicae: Litteris Ioannis Henrici Grunerti, acad. Typogr, 1735; Baumgarten, *Aesthetica*. G. Olms, Hildesheim, 1750). Aesthetics is thus caught between philosophy, **poetics**, and **rhetoric**, which had to

work hard to find its own independent location. The discipline's relative youth does not mean, however, that one can ignore its basis in classical philosophy, with which it has always been in dialogue from the **eighteenth century** onward. The great issues of Aesthetics, especially its reflection on **theories of beauty**, are rooted in classical thought, finding a full conceptual formulation and vocabulary in the **Enlightenment**, while augmenting reflection on creative processes within the arts and processes of reception. Through categories such as **beauty**, **ugliness**, the **sublime**, and **kitsch**, Aesthetics must come face to face today with a form of **art** whose borders are increasingly blurry and accept the disciplinary challenges laid down by neuro-aesthetics and technological hyper-realism, which are reanimating classical problems and terminology. Without being absorbed into new disciplinary and cultural horizons, contemporary Aesthetics is producing its own original standpoint, using its own conceptual tools to shed light on the new challenges that **art**, its **creation**, and **enjoyment** force us to confront.

Keywords

Aesthetics · Enjoyment · Taste · Creation · Genius · Aesthetic categories

History

If the meaning of the term “**art**” has changed over the course of history, Aesthetics does not attempt to establish what **art** may or may not be in terms of any rules or dogma. Instead, it takes account of the historical variation in that which people have considered to be **art** in any particular historical period, questioning those processes of understanding and interpretation connected to sensation, feeling, **emotion**, and the imagination, all of which play a role in reception/viewing and in the attribution of value to a **work of art**. The focus of Aesthetics is thus the entire field of experiences, actions, and processes that surround the production of a **work of art**, defining its identity,

symbolic meaning, and value: a field that concerns as much the **processes of creation** and production of **art** (including technical production) as it does the mechanisms for enjoying and evaluating art works.

The radical transformations to which the **concept of art** has been subjected by contemporary and twentieth-century artistic practices, its progressive expansion in which “**art**” is no longer necessarily an artistic production but instead the creative gesture as such (a gesture whose creativity also depends on the increasingly pervasive role of new technologies) have not freed Aesthetics from its task nor rendered obsolete its “historical” issues. Rather, **contemporary art** is posing new questions for Aesthetics, pushing the discipline to reflect in a critical and **consciously** theoretical manner on the changing relations between artistic activity and **reality**, values and creativity, as well as with the **art market**.

To return to the question of its origins, modern Aesthetics arose from the overcoming of the “classic” **idea of beauty** that was still dominant in seventeenth-century European culture. The intimate link between **taste** and pleasure that runs through the **eighteenth century** pushed many writers to reflect on the particular kind of pleasure that human nature can find in the contemplation of natural and artistic representations of the excessive, the deformed, the horrifying, shadowy and ugly, all of which are expressive and interesting for the receiver but cannot be traced back to the “classic” **idea of beauty** as order, the proportion of parts, and uniformity in variation. This is truer still in terms of the contemporary **experience of art**, which – along with historic avant-gardes – has definitively broken apart the constitutive relation between **art** and **beauty**, calling for new adequate **aesthetic categories** and parameters of judgment and evaluation.

There are, however, some overarching issues in Aesthetics that underscore its main principles and history, and from which it is hard to escape if one wants to provide an outline of the discipline: **creation** and **enjoyment** – or, put in another way, that which one makes or “invents” within the horizon of the possible, and that which one feels or senses.

One could claim that Aesthetics is the ability to have a particular awareness of things in such a way as to understand them through what strikes us or makes us feel **emotions**, qualities, similarities and differences: this becomes the initial moment of a game – a very serious game – which is more than mere hermeneutics. Here expression, **enjoyment** and **creation** appear on the one hand as a gift and on the other an obtainment from the standpoint of a subject who has applied all of their abilities and drawn on them through combining sensitivity, **taste** and judgment along the horizon of subjective choices. This has been the story of Aesthetics in modernity, a philosophical discipline able to provide expressive meaning to things and indeed that has been able to discover meaning inasmuch as it is the work of art itself that fills the subject's acts of perception with meaning, if (and only if) the receiver is ready to enter into a game of representation and expression. The rules of this game are never written, as Montesquieu (1757) and, after him, Kant (1790) demonstrated. It is from here that the flexible and alternating meanings, **emotions** and feelings derive. And yet, these uncertainties signal a precise journey, defined historically by a discipline that has made use of descriptive and interpretative categories, whose subjective horizon can often both be communicated and, indeed, shared.

Categorical System

An **Aesthetic category** – such as **beauty**, **ugliness**, **sublime**, **kitsch**, etc. – can be understood as a guide that assists the receiver/viewer in understanding the artistic universe. The attempt to categorize art does not, however, reduce its complexity to rigid schema but rather opens up onto a relational universe. If the authentic understanding of a **work of art** is not centered on a single moment but involved a heterogeneous quantity of motivations, categorization itself does functions as a means to not lose sight of the object and its justification, of the receiver and their feelings, despite the plurality of approaches.

Without any particular taxonomic expectations, the categorical system emerged when the

old system and hierarchy of the fine arts came to a close; in the **eighteenth century**, an important question was whether poetry or painting, sculpture of music was the more refined form (Batteux 1747; Diderot 1751; Du Bos 1719). The recognition of a plurality of values (intimately connected to the **crisis of beauty** and of the hierarchy of the arts) and the development of a reflection around particular aesthetic **categories** able to better interpret new artistic propositions, opened up perspectives that required redefining the **aesthetic object** as well as the **reception** and evaluation of a work.

We will examine three emblematic cases: the ugly, the **sublime** and the **kitsch**.

Ugliness can mean that which has not achieved its aim (which implies a value judgment), the unfinished (a technical judgment), that which is disappointing (a subjective judgment), that which is morally repulsive but technically perfect (a moral and technical judgment), the technical imperfect yet touching (a technical and subjective judgment), etc. (Rosenkranz 1853). There is a form of **ugliness** that we might call “pre-artistic” and an **ugliness** that is more specifically “artistic.” There is an **ugliness** of the thing itself and an **ugliness** of its rendering in art – and it goes without saying that the two things can also coincide, though not necessarily so. That which is usually ugly in nature can acquire a high level of **beauty** in art, as has been noted from Aristotle's *Poetics* onward. There is a functional **ugliness** and an anti-functional one, an **ugliness** through excess and another by defect and another still of waste. One might separate, in art, the **ugliness** of a work in its objectivity from the relative **ugliness** of the effects that this work solicits in the receiver, in their impressions and feelings.

In the theories of the eighteenth century, the **sublime** is very different from the highest form of **beauty**; instead it is the opposite of the idea of regularity proportion, harmony, form and balance. The **sublime** can even be defined as simultaneously pleasure and displeasure, a mixed feeling that is solicited in the subject by representations connected with the pain of others (Burke 1757). Still more than this, in a specifically Kantian language the basis of **sublime** is constituted by the idea of the “super-sensible”, an object

simultaneously of reason and feeling. Thus, there is a mathematical **sublime** (that which is large beyond all comparison) and a dynamic **sublime** (by which one measures oneself against the spectacle of nature as a power threatening fragile human existence). The **sublime** thus does not lie within any part of Nature but only within our soul, inasmuch as we can recognize ourselves as superior to Nature (Kant 1790).

Definitions of the **sublime**, however, do not stop with the eighteenth century. If the nineteenth-century **sublime** found the world of symbols, the twentieth-century version often referred to the metaphors of Lucretius, for whom the receiver of the **sublime** can be compared to a spectator observing a shipwreck (Blumenberg 1979). Comforted by their own position of safety, the subject conserves a certain emotional distance from that which they observe, even if in horror, allowing themselves an exclusively **Aesthetic** form of contemplation.

Within the **sublime** there thus exists a paradox that we can summarize in the following manner: “1. People avoid things that provide painful experiences and only pursue things that provide pleasurable experiences. 2. People have painful experiences in response to putatively **painful art** (e.g., tragedies, melodramas, religious works, sad songs, and horror). 3. People pursue putatively **painful art**. The paradox boils down to a simple question: If people avoid pain then why do people want to experience art that is painful?” (Smuts 2009). In the history of Aesthetics there are at least two main ways to solve this paradox: the meta-response theory and the conversion theory. The first states that terror and fear are negative experiences which are effectively painful for the subject experiencing them, while pleasure is a meta-response to them. “[...] [T]he meta-response is a recognition of our capacity to feel emotions appropriately – to pity someone in a tragic situation”, stimulating our sense of humanity. This fact arouses a meta-reaction in us: the satisfaction in finding ourselves to be moral beings. According to conversion theory, however, emotional activity is pleasurable even if it is provoked by the sight of ugly or imperfect objects, simply because it makes us aware of a level of **reality** higher than ourselves (Brady 2013).

Through reflecting on the representation of **ugliness** and the **sublime**, Aesthetics responded to an important question: can pleasure be found in that which is unpleasant and, if so, how can one understand the connection of judgment therein?

Both the **sublime** and the ugly share a sense of painful tension; yet from a qualitative and quantitative point of view, the ugly is strikingly different due to its resigned outlook, the lack of heroic tendency and high-sounding ethical moments, for its contained development of any form of **empathy**. It is possible (indeed, this is the case for many artists) to see connections with the caricature and grotesque within the ugly, even connections with the disgusting due to the profane tension that animates it.

In our own period, “**ugliness**” is increasingly an indicator of a vast range of artistic effects whose features – even if they can be described – are becoming increasingly blurred and uncertain. Under the wide umbrella of the ugly we find a complex and contradictory amalgam. Ever since so-called beautiful art came to terms with the **art market**, **ugliness** has become characterized as the tawdry and vulgar, becoming increasingly similar to **kitsch**.

Kitsch is a container of imitations that has to serve the function of immediate pleasure. Prefabricated words, expressions, attitudes and situations used a 1000 times over: everything becomes a cliché within a world of consolidated conventions. **Kitsch** mimics. With an increasing Platonic distance from the truth, it copies the artifact and makes it available to everyone. For the receiver, **kitsch** is a pleasing image that protects and intoxicates the present. Its opposite extreme is not represented by the high-brow but by all that which is simply mediocre (Greenberg 1939; Dorfles 1972).

Kitsch is to inauthenticity as art is to authenticity, even while maintaining the fact that not even “great art” can entirely lack **bad taste** precisely because every form of art contains “a minimum of convention, of the acceptance of pleasing the client, from which no artist is immune” (Moles 1971). Even today the hyper-production of **kitsch** can be seen as a response to the uneasiness of the common man or, in Moles’ terms, to “the inability

of the average conscience, of the man of the masses, to raise himself up, other than by gradual steps, to the heights of man's philosophy, industry and products, and to accept them as such" (Moles 1971).

Reception

To view or receive means to enjoy or not enjoy something and thus to find pleasure or displeasure in it; it also means to **taste**, listen or to allow oneself to be taken over by an **emotion**. Experiences, whether or high or low levels of involvement, imply two levels of investigation: a first, immediate moment of experience (tasting, for example) and a second that reflects on this experience, and which in some way also creates distance from the object in question (an analysis about that which one has tasted, which often then leads to a judgment: "I like it" or "I do not like it").

Our daily experience is filled with judgments of **taste** cloaked in **consciousness**: "this is beautiful", "that one's ugly." Due to the ease with which we issue judgments, we are not aware of its complexity. We are not aware of how much that judgment depends on our history, our culture, our educational backgrounds, the society in which we live, on the visual, palatal or sonic **taste** in which we are immersed, on subjective inhibitions, openings, and closures in relation to new experiences.

If we want to recall some of the issues that **taste** raises, we should first ask ourselves if there is only subjective **taste** or if it is possible to speak of a norm or a rule for **taste**. If we establish that we can speak of such a rule, we must then ask if it has any normative or regulative value; i.e., if **taste** is a question of immediacy or if it derives from a thought that meditates on and recognizes an object with a specific quality; and whether anyone is able to make a judgment or if this is only the privilege of the critic.

In the **eighteenth century** the need was felt to have a definition of **taste**. The century also saw the development of the "critic" (and the birth of the role of the art critic) who represents the "institutional" side of reception. At the basis of the eighteenth-century investigation we find the

broadly shared presupposition according to which – even if strongly compromised by sense (sight, hearing, touch, **taste**, smell) – pleasure is shared; sharing thus becomes the basis for a common sense. **Taste** seems to be a unity of individual preferences that nevertheless coalesce and coagulate within a community that recognizes them (Du Bos 1719). This claim to universality seems to stand in contradiction with an entirely subjective system of choice. The normative nature of the **Enlightenment** reflection on taste revealed in the writings of German authors has a historic origin in the relation to the precepts of good **taste** in seventeenth-century France, as well as conceptual roots in the shift from the use of the term "**taste**" in its physiological dimension to a figurative, intellectual use. The notion of **taste** is in fact characterized by a normative value both within its physiological version as well as in a theoretical, cognitive sense. The basic question for the normative **nature of taste** is represented by the study of those elements that might make up such norms (the faculty of the soul, of the imagination, intellect, reason; their functioning, the definition of the parameters of a correct faculty of judgment) and by the problem of the normative effectiveness of **good taste** and the role of elements considered as composing it (Hume 1757; Kant 1790; Mazzocut-Mis 2012).

Through the multiplication of artistic languages over the twentieth century, **taste** was no longer able to pose itself as a unitary point of reference. Many avant-gardes (and neo-avant-gardes) push against any exercise in **taste** that attempts to center itself as an inter-subjective **aesthetic judgment**, opening themselves up instead to the two polarities excluded by eighteenth-century judgment: the physiological – e.g., the artistic field that stimulates visceral reactions in the spectator: the ugly, the **sublime** and disgust (Menninghaus 2003) – and the more specifically intellectual – e.g., the horizon of conceptual art or the ready-made (Danto 2003). The removal of technique as a point of convergence for **taste** – the value of a work inasmuch as a product of manufacture is no longer an element under judgment – has slowly diminished the claim to universality from a critical-evaluative point of view.

There is, however, still another aspect to be analyzed. Over the last 50 years, the problem of **reception** has broadened our investigating psychological, sociological, physiological, and neurological horizons. The artistic universe thus becomes one of **emotions** that can even be measured and validated from a psychological, psychiatric, or neurological point of view. Furthermore, Aesthetics must now face the disciplinary challenges established by neuro-aesthetics, using its own conceptual tools to shed light on the implicit and unexplored claims of these disciplines without, nevertheless, being passively assimilated into new cultural horizons. Over the 1980s, Aesthetics has opened up to neuro-scientific research distinguished by the discovery of mirror neurons, a particular class of visual-motor neuron situated in the ventral premotor cortex (area F5) and in the inferior parietal lobule of macaques and humans alike, which has been attributed with the development of information relating to the comportment of others. Mirror neurons activate when we look at static images of actions or **emotions** and even representations of objects of still lives, which stimulate the mechanism of motor simulation, inducing the viewer to act *as if* the image represented was effectively real. The success of this discovery has not, nevertheless, radically transformed research into the role of the viewer, inasmuch as while it is true that the active cerebral zones that allow us to appreciate a Picasso painting, these are the very same that allow us to look at any kind of colored object. The question about why and how we judge something to be beautiful, ugly, **sublime** or **kitsch**, etc. remains (Chatterjee and Vartanian 2016; Leder 2013).

What is the future of **taste**? This depends on the constantly evolving object that is the **work of art**. If it is true that it is no longer necessarily **taste** that dictates the rules of art, it is also true that art requires a public that dictates its rules, rules that can be maintained or ignored. They are maintained if there is a meeting with the masses (as in **kitsch**) or ignored if the public is not the main horizon of reference, as has been the case for avant-gardes.

In order to understand tomorrow's viewer, we must thus also wait for the art of the future, a form

of art that will move within reproduction, stereotyping and, perhaps, the development of new technologies, and within the unique, unrepeatable character of the **here and now**. Perhaps in the near future even the method of reception will radically change. That which probably will not change is the method of expressing judgments of **taste**, whether more profound and reflective or superficial and entirely a-temporal.

Creation

When one speaks about “creativity,” even if the usual use of the word might seem well defined, one needs to bear in mind that we are dealing with an expression that has changed its meaning over the course of the centuries. It is a term that did not appear in philosophy, theology or European art for nearly a 1000 years: the Greeks had no corresponding term; the Romans did, but they did not apply it to any of these three fields.

What is creativity then, and what is its connection to possibility?

Speaking about “**genius**” means, first and foremost, referring to an expressive field that, beyond the aesthetic history of the concept, refers to subjective abilities made explicit in the production of artistic objects. These abilities have, in various ways, intersected with those of **taste** that sometimes are inseparable from them. The bond between **genius** and the subject's inventive immersion can be seen through different pathways which do not always coincide, ranging from **rhetoric** to psychology and from poetry to theories of expression.

It was yet again in the eighteenth century, as was the case with **taste**, that the need was felt to conceptually define **genius**, beginning from its poetic-rhetorical roots (Batteux 1747; Du Bos 1719). The artist (or, better still, the **genius**) interprets, develops and constructs through their confrontation with nature – in which they themselves are rooted. The interpreter's vision is, or ought to be, impersonal, and contains an attempt to put subjective daily passions between brackets in order to open a direct and universal relation between perspective and the world. In this relation (which is in itself representation), the “possible” is

formed, which is the artist's own choice. The artist interprets nature, creating a "new nature", which is itself the work of art (Gerard 1774). **Genius** is thus not an unregulated power, but rather the natural talent that gives art rules, constructing "**aesthetic ideas**" capable of animating the complexity of all subjective faculties (Kant 1790). This complexity – and perhaps here we find the aporetic conclusion of the entire journey of eighteenth-century aesthetic thought – which can no longer be contained within a harmonious and regular framework.

Over the nineteenth century, the power of creativity widened out and **genius** was the flame that fired up artists to rise up; one can clearly see a changing relation between **genius** and **taste** which, in the century of **Enlightenment**, saw the second of the two terms take the dominant position. In the nineteenth century there were differences of degree between the two principles but not qualitative differences, because one can say that **genius** became independent of **taste**. This shift raises the question of whether **genius** contains **taste** within it or whether **taste** ought to be understood as already **genius** in itself. Both of these two directions, however, seem to claim the assimilation of **taste** by **genius**, meaning that in the nineteenth century **genius** was decreed as omnipotent (Schelling 1796–1805; Hegel 1835).

Today we no longer talk about **genius**, and we can only speak about "**creation**" with difficulty. The artist does not necessarily create **works of art** (as much as the artist seems to be situated within this expression with a certain durability or even permanence) but instead builds, develops or simply presents objects that enter into a circuit call the **art market**. The twentieth century seems to have definitively removed the notion of **genius** from the divine, **mythical aura** to which it was still attributed in the nineteenth century. Many artists even began to claim the impersonal dimension of their authorial status. It is almost as if, after centuries of productive effort to be recognized in their own right, the parabola of **genius** has to be drawn back into its work or by a kind of factory stamp more similar to a brand than an artist's signature.

What is the status of the creator today, and what is a **work of art**? One used to say that the

artist creates self-sufficient "beings", from which arise perceptions and affects that are cannot necessarily be assimilated to those of their creator. But of how many objects entering into the **art market** today are we prepared to attribute the preceding definition?

We know that Duchamp did not present his *Fontaine* (1917) for artistic delight but that, soliciting a reaction against visual indifference, hoped to reawaken people from an aesthetic slumber. Phenomena of aestheticization of daily life within the artistic sphere seem to have stimulated a reflection both on the **here and now** (society in its commonly accepted forms, its canonized deformities, its preconceptions, etc.) as well as on the medium that expresses it (art itself). But can this "magic" continue indefinitely? The reification of the daily object within the museum circuit and that of the **art market** makes such objects open to being bought and sold, increasing their economic value. Faced with a reified object of this kind, it is difficult to question George Dickie's definition according to which it is the art world – i.e., its experts – who determine what art is (Dickie 1974): a definition that is not entirely outdated and which holds true in many spheres.

In the twentieth century, while many avant-gardes opposed the standardization and commodification of art, arguing against bourgeois and **kitsch taste**, at the same time the art market and the entertainment industry made art its own product, a mass experience, a brand.

It is thus difficult today to answer the question about what the status of the creator might be. We are in a period of fast, unstoppable change. Nevertheless, something remains and is conserved. A vast horizon lies ahead of us waiting to be investigated, in which creativity and **reception** meet and fall away, love and hate each other, looking to each other for commercial goals or meeting simply on the basis of the unfathomable basis that is emotion itself.

Conclusions

Let us take a last look at Duchamp, who in 1914 made an artwork out of a bottle-rack.

This involved no more than a simple syntactical maneuver – from the cellar to the museum; this is *de facto* a semantic shift, from an instrumental object to an art object. The world thus opened up, as it has done, to every possibility. Since then art and the possible have been held in an inextricable and complex tension that has led to radical changes in which we are still immersed. In a certain sense, the **ready made** led the way to the hyper-realism that has today become, more than ever before, a dominant theme in the recognition that new technologies have had, and continue to have, over the field of **creation**. **Ready made** has now become, as Baudrillard underscores, the “virtual technology media circus” and the “perpetual **reality** show” (Baudrillard 1995). Art invades **reality** and **reality** invades art, removing Aesthetics, which investigates **creation** and reception. From every comfort zone provided by the discipline’s history. When the image of **reality** coincides with **reality** itself, or when the **art work**, in coinciding with an instrumental object, becomes an artistic object only by inserting itself into the museum circuit and that of the **art market**, then Aesthetics must change its standpoint and, without nevertheless losing itself, turn to other disciplines. In the end, new technologies – marked by immersion and the increasing involvement of the receiver, the viewer – open up new challenges, chasing the new dream of a **reality** that increasingly confuses itself with the virtual and vice versa.

Cross-References

- [Aesthetics](#)
- [Emotion](#)
- [Empathy](#)
- [Genius](#)
- [Here and Now](#)
- [Reality](#)
- [Rhetoric](#)
- [State of Consciousness](#)
- [Sublime](#)
- [Virtual Reality](#)

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Affordance

Vlad P. Glăveanu

School of Psychology, Dublin City University,
Dublin, Ireland

Centre for the Science of Learning and
Technology, University of Bergen, Bergen,
Norway

Abstract

Affordances have been conceptualized by J. J. Gibson as what the environment offers, provides or furnishes the organism, in other words, as possibilities for action. However, this notion is not without controversy, in particular surrounding its nature and properties. This entry will consider the ways in which the concept of affordance can help us build a material theory of the possible, one that is intimately related to both subjective experience and to culture. The entry discusses different definitions of affordance, its types and characteristics, before outlining a model of the possible based on the interplay between materiality, intentionality, and normativity. The implications of this model for our understanding of agency and possibility are discussed in the end.

Keywords

Affordance · Materiality · Intentionality ·
Culture · Objects · Agency

Introduction

Chairs are typically made to sit on. Glasses and bottles help us store all sorts of liquids. Mobile phones allow us to call or text people. A boat is meant to float on water. In each one of these cases, what I am referring to are key affordances. Chairs afford sitting, glasses and bottles afford drinking from, mobile phones afford communicating, and boats afford sailing. That is, in principle, what they do. A boat with a hole in it loses its affordance of floating. Similarly, a broken

glass cannot carry liquid or can carry much less of it. At the same time, all these objects afford much more to our action than singular possibilities, for as convenient (and conventional) as these possibilities are. One can also stand on a chair to reach something on the top shelf. Or can use a mobile phone to play music or watch videos.

As we can see from the brief discussion above, there is something intrinsically important about the relation between affordances, action, and possibility (as well as **impossibility**). Affordances facilitate, guide, constrain, and sometimes forbid specific courses of action. At the same time, they are multiple, dynamic, and relational. As I will discuss further in this entry, an affordance is not a universal property of an object. Chairs don't afford sitting for everyone at all times; for example, they would be too tall for toddlers to reach and adults in a pitch-dark room would never realize they are even there – either way, affordances represent a *meeting point* between person and environment and reside in neither of them.

The notion of affordance was coined by James J. Gibson, a founding figure of ecological psychology, the branch of psychology focused on the importance of the environment for human perception and action. Of course, the interest in the environment and its objects precedes Gibson and yet it is his notion of affordance that became very popular and started being used in a variety of applied fields (Luyat 2009). This popularity ignited also many controversies – several of which will be reviewed here – that make the concept difficult to grasp, conceptually shift, and either too wide or too narrow to be used in practice. It is worth noting here that Gibson himself didn't propose a full theory of affordances and merely got a chance to sketch this notion, often in contradictory ways. His interest was mainly in the study of perception, in particular visual perception (see Gibson 1986). Gibson believed that, when we perceive objects, we don't merely form a mental representation of their sensorial properties or qualities but what we perceive are their affordances, i.e., what they afford our action. In this way, he considered perception as an activity.

It is this close connection between affordances and human activity that prompts many scholars to define the former as *possibilities for action* (see Shaw et al. 2019). This proposition has been studied mainly from the point of view of action but what exactly does “possibility” mean here? And how can affordances help us build a material theory of the **possible**? The present entry focuses on these two questions. In order to answer them properly, however, we need to understand better what an affordance is, why it can be hard to theorize, and what its characteristics and types might be.

Definition and Controversy

Gibson famously defined affordances in the following terms:

The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. The verb to afford is found in the dictionary, but the noun affordance is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment. (Gibson 1986, p. 127)

The idea of complementarity between animal and environment, mentioned above, is essential to understand Gibson’s thinking and his overall project of overcoming mind-matter and mind-body dualisms. The study of perception before him often pitched an external, objective reality against the personal and subjective ways of making sense of it. For Gibson, an affordance “points two ways, to the environment and to the observer” (p. 141). It is, as such, a relational notion, one that cannot and should not be attributed to either environment or observer but their interrelation. Greeno (1994) considered this interrelation as the articulation between affordances or attributes of something in the environment and the abilities (or effectiveness, or aptitudes) of the person. The presence of both is necessary for action or for actualizing an affordance. However, this formulation risks throwing the notion back into old dualisms between person and world. By firmly linking affordances with material attributes, some might

be tempted to study them separately from the abilities of the person. We can imagine, for instance, listing material affordances in abstract terms, independent of any individual abilities. This falls short of Gibson’s plea to refer “both” to environment and animal, for affordances to be “equally a fact of the environment and a fact of behavior”, “both physical and psychological, yet neither” (Gibson 1986, p. 129).

Another well-known reinterpretation of the notion of affordance comes from Donald A. Norman who made them popular in design studies. For him, “the term affordance refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used” (Norman 1988, p. 9). From a designer’s perspective, it makes perfect sense to focus on perceived affordances and how easy or hard it is for users, for example, to pick up the fact that a possibility for action exists and can be acted upon. “When affordances are taken advantage of, the user knows what to do just by looking: no picture, label or instruction is required” (p. 9). But here, once again, we enter the same old problem of dualism. By distinguishing between “real” and “perceived” affordances, Norman as well accepts that an affordance can exist in objective terms without an observer to “meet” it and, in “meeting” it, to make it possible. Gibson himself was tempted by the idea of affordances as objective features before rejecting it based on his anti-dualistic stance: “the affordances of the environment (. . .) are in a sense objective, real, and physical, unlike values and meanings, which are often supposed to be subjective, phenomenal, and mental. But actually, an affordance is neither an objective property nor a subjective property; or it is both if you like” (Gibson 1986, p. 129).

The difficulty of studying affordance as a truly relational phenomenon has plagued this area of research for more than four decades and it continues to do so today (see, for instance, the recent distinction between physical and neurocognitive levels in Osiurak et al. 2017). This has made many scholars highly critical of the term and its use (e.g., Oliver 2005). And, in fact, the roots of this discontent can be found in Gibson’s own writing

and his own failure to overcome dualism. Consider the following passage:

The concept of affordance is derived from these concepts of valence, invitation, and demand but with a crucial difference. The affordance of something does not change as the need of the observer changes. The observer may or may not perceive or attend to the affordance, according to his needs, but the affordance, being invariant, is always there to be perceived. An affordance is not bestowed upon an object by a need of an observer and his act of perceiving it. The object offers what it does because it is what it is. (Gibson 1986, pp. 138–139)

Here Gibson lays the ground for the hypothesis of *direct perception* of affordances, in other words their objective reality, outside the observer, and their immediate grasp whenever “information is available in ambient light for perceiving them” (p. 140). Not only does this claim betray anti-dualism, but it also ignores the basic fact that our interaction with the material world is thoroughly cultural and grounded in acts of learning with and from others. In the words of Dant (1999), the “material environment is not natural or given” (p. 12) and our “interactions with things – touching, making, looking at, talking and reading about, using, storing, maintaining, remaking and so on – are social in that they are learnt and shared within the culture” (p. 14). To come back to the initial example of the mobile phone affording making calls and listening to music, these affordances would never be spotted through direct, culturally unmediated perception. One needs to have learnt about phones in order to perceive these affordances even “in ambient light”.

Gibson was well aware of this critique and, at different points in his writing, formulated it himself (see, for example, his discussion of mailboxes). As he noted, direct perception often reveals affordances but not always. “We must, of course, learn to see what things really are – for example, that the innocent-looking leaf is really a nettle or that the helpful-sounding politician is really a demagogue. And this can be really difficult” (Gibson 1986, p. 142). Once more, affordances do not “belong” to material reality alone; they are emerging from the co-evolution of person and environment that is culture. Costall (1995, p. 472) added

to this discussion when he rightfully claimed that learning affordances doesn’t simply concern what they happen to afford but what they are *meant* to afford. Culture doesn’t only make certain affordances obvious to us – like sitting on chairs and drinking from glasses –, it creates conventional or canonical uses that are hard to think beyond. Could chairs be glued to the wall and be called art? Yes, their material structure affords this action, but we need some special person attributes to enact it. And this has major consequences for what is possible.

Last but not least, there are some other controversies associated with the definition and description of affordances. For instance, it is debatable whether they are stable and permanent or fleeting and highly situational. Gibson’s writing seems to suggest both even if he often argued for the former. Chemero and Turvey (2007, p. 33) disagree: “affordances are exquisitely context-dependent and ‘quicksilvery’: they emerge and dissolve very rapidly, due to small changes in the animal, environment or both.” Once more, we are coming back to the objective (and thus invariant) versus relational (and thus situational) nature of affordances. In this entry, I will strongly argue for the latter, in agreement with the spirit of Gibson’s anti-dualistic stance, even if not always in line with his actual statements about affordances. The fact that an affordance is, indeed, relational, plays an important role in how we theorize the possibilities associated with acting on affordances. Before outlining this in more detail, let’s consider the characteristics and types of affordances, a discussion that prepares the ground for the framework of the possible proposed at the end.

Characterization and Types

Following Gibson, there are three main characteristics of an affordance:

1. An affordance exists relative to the action capabilities of a particular actor.
2. The existence of an affordance is independent of the actor’s ability to perceive it.

3. An affordance does not change as the needs and goals of the actor change. (McGrenere and Ho 2000, 1)

These are all derived from his definition of affordances as relational, person-environment phenomena, but also reflect Gibson's belief in the somewhat "objective" nature of an affordance. On the other hand, as we have also seen before, authors like Norman would argue that the most important characteristic of an affordance rests in how easy it is perceived, and this depends on the person's knowledge, experience, and culture (p. 3).

How can affordances be both relatively stable and "objective" as well as highly flexible and situational? This point of debate, raised in the previous section, is addressed by a simple typology proposed by Shaw et al. (2019) who distinguished between *affordance-types* and *affordance-tokens*. The main distinction here concerns the level of generality or abstraction. For instance, in general terms, all chairs afford sitting. This is an affordance-type. But any particular chair might not afford sitting for a particular person either because of the stability of the chair, weight of the person, or maybe because someone else is already sitting on it. In these cases, the affordance-token is missing. There is, of course, a deep connection between the two. In the words of the authors, "epistemologically speaking, types can be known only through their tokens, and the collective resemblance the tokens share is the type" (p. 5). In the end, it is a matter of scale dependency – for affordance-tokens – and independency – for affordance-types.

This distinction helps us rethink the issue of generality and specificity, but it tells us little about the "content" of an affordance and its exact relation to action. Given that human action is different from simple behavior and it has a deeply social and cultural dynamic, affordances can once more be read at different levels depending on the aspects of the action we are focusing on. Pols (2012) differentiated in this regard between *basic actions* (e.g., sitting on a chair), *the consequences of these actions* (e.g., the fact that another person cannot sit there at the same time), *the coordination of actions into a*

plan (e.g., coming early to make sure you have a seat), and their *broader social impact* (e.g., sometimes the simple act of sitting has political implications, for instance Rosa Parks' refusal to give up her seat to a white passenger and its role in the civil rights movement). Hence, the act of sitting affords many more things, individually and socially, than resting on a chair and this needs to be recognized. Affordances can thus be understood hierarchically as affording basic actions, affording the effects of those actions, affording the execution of plans and, at times, affording social action as well. The higher we go up this "ladder," the more the hypothesis of direct perception fades and leaves room for a cultural view of what an affordance is.

Another typology, proposed by Gaver (1991), focuses on the relation between the presence or absence of an affordance and the presence or absence of the perceptual information that exposes it. This distinction between "real" and "perceived" resonates widely with Norman's understanding of the term and, when put together into a two by two table, generates four possibilities: *perceptible affordances* (present and perceived as such), *hidden affordances* (present but not perceived or perceived as absent), *false affordances* (absent but perceived as present) and *correctly rejected affordances* (absent and perceived as such). Putting aside the dualistic underpinning of this framework and the fact that it undermines the relational nature of affordances, it does raise the interesting practical question – for designers and not only – of how people can be helped to discover more of the hidden affordances of things and avoid false ones. Added to this is the question of how ready a person is to actualize or enact an affordance once it is perceived. Because we can easily imagine situations, for instance, in which the affordance of making calls with a mobile phone is clearly perceived but, given that the phone belongs to some else, this affordance cannot really be acted upon. In this regard, Anderson and Robey (2017) introduced the notion of *affordance potency* designating "the strength of the relationship between the abilities of the individual and the features of the system at the time

of actualization, conditioned by the characteristics of the work environment” (p. 103). We return here to the original Gibsonian idea that affordances will depend equally on the “match” between animal and environment.

But we also return to the role of culture and the fact that canonical uses of objects always have a higher affordance potency, i.e., they are much easier to actualize. Thus, chairs are perfectly made for sitting but make it difficult for someone to sleep in them comfortably. There is, as such, a normative aspect to the perception and use of affordances, just as there is a personal element of goals and needs motivating human action. Based on all these three elements – intentional, norms, and affordances – our action in the world can be either more conventional or more creative/surprising. How do we use affordances for creative action? I proposed in the past a small typology (see Glăveanu 2012) distinguishing between *unperceived affordances*, *uninvented affordances*, and *unexploited affordances*. Creative people tap into one or more of these categories in order to go beyond the conventional of their and others’ existence. They do so by becoming aware of new affordances in their environment (e.g., a glass can be used to hold down paper on a windy day), inventing objects with new properties whenever needed (e.g., glasses can be piled up together to create a building in children’s play) and, sometimes, going against cultural norms in order to expand the possible (e.g., glasses can be broken to generate pieces with new affordances).

Towards a Material Theory of the Possible

It is no coincidence to mention **creativity** in a discussion of affordances. In fact, as Gibson noted from early on:

The fact that a stone is a missile does not imply that it cannot be other things as well. It can be a paperweight, a bookend, a hammer, or a pendulum bob. It can be piled on another rock to make a cairn or a stone wall. These affordances are all consistent with one another. The differences between them are not clear-cut, and the arbitrary names by which they are called do not count for perception. (Gibson 1986, p. 134)

With this statement, he demonstrates the use of divergent thinking when it comes to a stone, an exercise that strongly reminds us of the Unusual Uses task developed by Guilford (see Goldman 1965), asking respondents how many things they could do with a brick. If affordances designate action possibilities or action potentials, as I called them in the past (see Glăveanu 2018), then the creative process can be defined as an active exploration of more of these possibilities than what is conventional or canonical (Glăveanu 2012). In the end, **change** is ubiquitous when it comes to affordances, something aptly captured by Heft who said that, “from the perspective of sociocultural change, new entities with novel affordances are introduced into the culture, new affordances of familiar objects are realized, familiar affordances are sustained over time through continued use, and affordances fade from the scene through disuse” (Heft 2003, pp. 175–176).

What does this have to do with the possible? Not only is creativity one of the key processes involved in engaging with the possible, but my argument here is that a closer consideration of affordances can hold the key to developing a material theory of human possibility. I call it “material” in order to emphasize the close link between affordances and the material properties of objects without conflating the two. Indeed, as stated before, in a non-dualist, sociocultural framework, affordances *cannot* be separated from the person and located strictly within the environment. Nonetheless, this notion highlights the fact that physical properties do exist and they do matter, enormously in fact, for what we perceive as possible and what we enact of it. Affordances bridge material properties and the person’s intentions and abilities seen as an inseparable whole. They are at once material, psychological, and cultural, helping us overcome the historical difficulty of considering culture in non-reductionist ways (as either material only or primarily non-material; Reckwitz 2002).

The seeds of the possible can be found in the interest to understand how exactly affordances become actualized. More specifically, how we move from “possibility-for-action to actuality” (Shaw et al. 2019, p. 12) and, I would add, the

other way around: how actualized action opens up a new horizon of possibilities. My argument, building on a model I proposed a few years ago (see Glăveanu 2016), is that a reflection on affordances and their relation to materiality necessarily invites a closer consideration of intentions or **perspective**, on the one hand, and norms and culture, on the other.

To take a concrete example, let's go back to the idea of sitting on a chair. As we have established, there are many things that are possible in terms of our action with chairs or, using the vocabulary here, many affordances that could be actualized. What we often actualize from them though is the rather conventional option of taking a seat. This is what we typically intend to do when looking around for a chair in a crowded room, and also how we are culturally encouraged to behave (in other words, nobody in the room would be shocked if we take a seat, unless perhaps if we bypass an elderly person or a pregnant woman). Still, there is more – much more – to the horizon of the possible in using chairs. To explore the possible further we would need to examine the gaps or tensions between what we *could do* with a chair (the material aspect captured by affordances), what we *would do* with it (the psychological aspect captured by intentions or perspectives), and what we *should do* with it (the cultural aspect captured by norms and normativity). What might be possible if we change the material properties of a chair by modifying its shape, size, color, etc.? What about if we were approach it with another intention than sitting, what else could we want from it? Finally, what kind of cultural norms are there around the use of chairs and how do they vary? What would it mean to violate them?

All of these questions test the limits of what is possible and invite us to consider different “categories” of affordances. Those that expand our perspective on the world and tap into previously unperceived possibilities. Those that modify the material support and its attributes, resulting in new, “invented” artifacts. And those that contradict one or more cultural norms in order to enlarge the space of what is possible in a given situation, thus enacting unexploited alternatives. And then

there are uses that enact more than one of these possibility-expanding actions at once.

Reading the possible in terms of the dynamic between *materiality (could)* – *intentionality (would)* – *normativity (should)* relies thus heavily on a series of relational concepts such as affordance (the meeting point between “could” and “would,” shaped by culture’s “should”) and perspective (the “would” of our actions that meets the “could” and the “should” of the material and the social world, respectively). If affordances are action potentials, perspectives are action orientations that come to discover and use these potentials (see Glăveanu 2018). But affordances themselves can shape perspectives, something nicely emphasized by Withagen et al. (2012) when they argued that affordances also invite behavior. Going back to the chair example, sometimes the mere sight of it and its affordances makes us aware of how tired we are and in need of a seat.

Summary

This entry defined affordances from multiple perspectives and covered some of the main controversies around this old concept. It reviewed different typologies of affordances that complexify the notion and make it a better fit for the study of complex human action. The possible represents such a highly complex phenomenon and, in its exploration, we need to consider affordances and materiality in their relation to personal attributes and with culture. The interdependence between materiality – intentionality – normativity and the ways in which affordances both enable and constrain our possibilities for action are at the heart of the possible and of human **agency**. Agency itself, when it comes to exploring what is possible, doesn't reside in the person or in the environment alone, but in their interrelation. It is thus best defined as *co-agency* (see Glăveanu 2015) and studied in the interplay between action orientations (perspectives) and action potentials (affordances), both within a sociocultural frame. Gibson wrote that “the possibilities

of the environment and the way of life of the animal go together inseparably” and that, “within limits, the human animal can alter the affordances of the environment but is still the creature of his or her situation” (Gibson 1986, p. 143). Expanding these limits is the province of the possible and a direct consequence of the state of co-agency that defines human existence.

Cross-References

- Creativity
- Perspective

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Alchemy

João R. R. Tenório da Silva¹ and
Cristiano B. Moura²

¹Universidade Federal de Pernambuco, Caruaru, PE, Brazil

²Centro Federal de Educação Tecnológica Celso Suckow da Fonseca, Rio de Janeiro, RJ, Brazil

Abstract

Also known as “hermetic science” in reference to the writings of Hermes Trismegistus, Alchemy is a type of knowledge that has developed over the centuries based on the interactions between mysticism, science, and art. Although not considered a natural science like today's chemistry, physics, biology, among others, Alchemy still permeates human thought, in a way that references can be found in several cultural manifestations. Thus, the objective of the present entry is to discuss the idea of the possible on the threshold between these two perspectives: Alchemy and

Chemistry, with special attention to the relationship between science, mysticism, and art. For this, we explore the question of the possible from an analysis of the processes of signification of some alchemical representations, observing how such knowledge could have unfolded in what we know today as Chemistry, with particular attention to the concept of fusion, which is understood in Alchemy as a process of joining bodies through the purifying power of fire, and, in Chemistry, as a change in physical state or a type of junction of melting metals to form alloys.

Keywords

Alchemy · The possible · Chemistry · Semiotic · Science

Introduction

Magic, secrets, and mysticism. Alchemy still holds the public attention to this day. On the one hand, this is due to the success of literary/cinematographic works (such as the “Harry Potter” saga) that broaden people’s horizons with ideas inspired or similar to Alchemy (Martinon-Torres 2011). On the other hand, the recurring association between alchemical practices and esotericism, mysticism, occultism, and religiosity keep this ancient tradition alive in the practices of occult groups until today (*Ibid.*). Thus, what would Alchemy be in such a context? How could we define it?

According to Principe (2013), this has been one of the most intricate issues for historians of science for a long time and for a variety of reasons, from which two are worth mentioning here: the scarcity of historical sources, especially from the medieval period, which allowed greater assertiveness about what was done in alchemical laboratories and with what intentions; and the several errors or excessive simplifications – from a historiographical point of view – that ended up erasing important details of history. However, advances in the historiography of Alchemy ultimately added another perspective on this subject (Newman and Principe 1998).

For Nummedal (2016, p. 59), Alchemy comprises a “surprisingly cohesive intellectual tradition stretching from Greco-Roman Egypt, where alchemy seems to have originated, to the present.” Not only does Alchemy comprise the literature on this tradition, but it also includes a set of practices, ways of doing and thinking that characterize, more or less, the so-called Great Art. According to Perez Pariente (2016), the *Papyrus Leiden I (Ipuwer Papyrus)*, for example, which dates from the third century, depicts a description of procedures to obtain metallic alloys that mimic the appearance of gold and silver, to form substances with the appearance of gems, as well as information on dyeing fabrics. Still, according to the author (Perez Pariente 2016), several more or less perennial characteristics can be observed throughout the extensive alchemical tradition, such as: the use of symbolic, allegorical, and sometimes hermetic language, both to express deeds, as well as to hide them; vitalism, that is, the constant comparison between the processes of evolution of matter and those in living organisms; and the belief in the existence of an evolutionary line of metals, ranging from the most common metals such as iron and lead, to the most perfect metals, such as silver and gold – which would explain the resistance of gold to various chemical reagents, for example. Finally, we note that there is an influence of the Aristotelian doctrine on explanations about the constitution of matter – notably the theory of the four elements, originally proposed by Empedocles (c. 490 BC – 430 BC), but adopted and propagated by Aristotle (Kingsley and Parry 2020) – and elements of magic and mysticism that are commonly associated with alchemical tradition.

Anyway, when it comes to Alchemy, it is undeniable that there are records with very suggestive language, rich in allegories and word games, which came in handy during movements from different spheres of human culture, such as Romantic poetry, German idealism, and modern literature (Roob 2003). In several texts, there is frequent mention and use of explanations based on worldviews close to mysticism, as they resorted to arguments such as astral magic, gods, spirits, cosmic souls, from Gnosticism to Kabbalah (*Ibid.*). Therefore, as detected in some works

on historiography of Alchemy, such as the propositions of Newman and Principe (1998) that emphasize more material aspects and that blur the boundaries between chemistry and alchemy. Although historiographically well-founded, these are still a topic of discussion, as Pérez Pariente (2015) also points out.

Contrasting this description of Alchemy with the scientific practices that today characterize Chemistry, it is possible to observe a non-negligible overlap with regard to instruments, techniques, ideas, and proto-ideas between the two practices. However, these traditions are reasonably different from each other. Considering this, an intriguing question is: How was this historical change possible, from a “science” like Alchemy, based on mysticism and religiosity, to today’s chemical knowledge? How can Chemistry, Alchemy, and the processes of signification between both traditions be analyzed in order to understand the possible under these two perspectives?

Based on this overview, the objective of this entry is to discuss the idea of the possible on the threshold between Alchemy and Chemistry, with special attention to the interactions between science, mysticism, and art. Thus, the possible is considered as something that emerges in the encounter between two perspectives, as pointed out by Glăveanu (2020), and not just as a product that opposes what is real or concrete. Therefore, when analyzing the transition from Alchemy to Chemistry, it is assumed that this comes from the emergence of a novelty (see section Novelty) (Brioschi 2020), in the process of signification, through semiotic mediation. Based on this idea, this entry adopts the model $A \leftrightarrow \text{non-}A$ (Valsiner 1998) to understand the processes of signification through mediation by signs, following the semiotic perspective (see section Semiotics) (Innis 2020). For this, the question of the possible is explored from the analysis of the processes of signification for two images (iconic and metaphorical) associated with alchemical practice, and how this knowledge may have unfolded later in what Chemistry calls a fusion process – a change of state of matter or the “combination” of melting metals.

The Possible in Alchemy: From Alchemy to Chemistry

In the work of Martinon-Torres (2011), the idea that a direct association of several mystical, occult characteristics corresponded to Alchemy as a whole is contested, and its further departure from Chemistry is assessed. At first such a description of Alchemy – often in a derogatory tone, as pointed out by Principe (2011) and Newman and Principe (1998) – led to the defense that Chemistry emerged as a breakdown with an archaic, irrational, and fraudulent knowledge towards a modern, scientific, and rational knowledge. Later on, according to Marie Boas Hall and other historians of her generation (Newman and Principe 1998), these ideas have been revisited, giving rise to a multiplicity of interpretations and hybridizations between Chemistry and Alchemy especially in the period between the sixteenth century and the end of seventeenth century. If this makes the problem of Chemistry boundaries between Alchemy somewhat thorny to be analyzed, it nonetheless multiplies the possible interpretations of the processes of signification at the threshold between these two traditions, as will be explored throughout this entry from the “ground” of the possible.

A reinterpretation of the transition from Alchemy to Chemistry starts from some assumptions, among which we highlight that to assert a clear distinction between Alchemy and the emerging Chemistry before the eighteenth century implies to say that the authors of that time already did it in their writings, which is false. It is possible to observe authors who used both terms interchangeably (Alchemy and Chemistry) to refer to their own practice (Martinon-Torres 2011). An example of this is in the book *Alchemia* (1597), written by Andreas Libavius (1550–1616). The book states that *chrysopoeia* (gold-making) is established under the aegis of Chemistry, although it resorts to rather alchemical concepts, such as the very idea of producing gold from “inferior metals” (the transmutation). Another important assumption to be mentioned concerns the etymological reconstruction in both words. According

to Newman and Principe (1998), such interpretations about the origin of both the words Chemistry and Alchemy were replicated in textbooks and encyclopedias, often attributing the *chrysopoeia* exclusively to Alchemy, which created the false impression that such a distinction was already well established in the sixteenth and seventeenth centuries.

To address this anachronism, Newman and Principe (1998) suggest the use of the archaic term *chymistry* to refer to this hybrid discipline dated from the sixteenth century to the end of the seventeenth century. Before that period, the use of the term chemistry was rather insignificant, but then, after the end of the seventeenth century, Alchemy started to wear off. For the authors, the use of *chymistry* in this case does not directly evoke Alchemy or Chemistry (Martinon-Torres 2011). Thus, the creation of the concept of *chymistry*, as something that is between Alchemy and Chemistry, can be considered as a reflection of how the possible emerges out of the relations of tension between two perspectives, in this case, two fields of knowledge.

Alchemy: Science, Mysticism, and Art

As explored briefly, Alchemy relates to mysticism and the arts. In addition, it also relates with what came to be known later as modern science. Starting with the last, we can point out some intersections between Alchemy and modern science. The first, more direct, concerns the period in which it became known as *chymistry*, as discussed earlier. In this period, the Great Art was often indistinguishable from the emerging chemistry, so that they share practices and theories – both techniques that chemistry ended up inheriting in its daily practice, as well as ideas and proto-ideas that were later further developed in the course of the development of the chemistry (Martinon-Torres 2011). As some examples, it is possible to mention the distillation processes, sometimes attributed to Cleopatra the Alchemist (fl. c. third century AD), and a variety of instruments and techniques, linked to the artisanal knowledge of many alchemists, like the *bain-marie*, which

would have been created by Mary the Jewess (c. first to third century AD). All these instruments and techniques represent how the manipulation of materials were understood with the goal to modify the nature. In this sense, the new (construction) emerge from the old (destruction), in which the alchemist played an important role of intervening in the transformations of nature. It represents a metonymy of the tension between change and permanence that permeates the core of this entry, as examples of the dynamic $A \leftrightarrow \text{non-}A$ of meanings that will be more developed further up.

As for mysticism and art, the references of alchemical writings to divine entities and mythologies, sometimes created on their own, were constant. With regard to the mysticism present in Alchemy, Roob (2003) points out the evidence of mysticism especially associated with the use of allegorical language – fruitful in possibilities of signification. To cite an example, Pérez Pariente (2016) recalls a great character in the history of Alchemy: the Swiss physician, alchemist, and philosopher Philipus Aureolus Theophrastus Bombastus von Hohenheim, who became famous as Paracelsus (1493–1541). One of the stories associated with Paracelsus states that talismans were widely used in their therapies with patients, along with other remedies. These talismans were metallic objects in which:

A series of signs or words of a magical nature were recorded with which they were intended to attract the healing virtues that supposedly emanated from the planet associated with the metal from which the talisman is made and which in turn governs different parts of the human body. In addition, the talisman was made at certain times under the influence of specific astrological configurations established by rules that the physician had to know, in order to capture his power in the talismanic object. (Pérez Pariente 2016, p. 39, our translation)

Another example that can be cited is an excerpt from *Dialogue of Cleopatra and the philosophers*, commonly attributed to Cleopatra the Alchemist, who was a well-known alchemist who lived in the third century and who possessed the secret of the philosopher's stone. This artifact refers to a “magical” material that would be capable to make the transmutation, that is, transforming ordinary metals in gold and also would have extraordinary

medicinal properties (Nummedal 2016; Pérez Pariente 2016). In the Dialogue from which is highlighted the following excerpt, Cleopatra discusses, through analogies and encrypted language, some principles of the alchemical tradition, more specifically the purification of matter through fusion (melting) by fire:

when you take plants, elements, and stones from their places, they appear to you to be mature. But they are not mature until the fire has tested them. When they are clothed in the glory from the fire and shining color thereof, then rather will appear their hidden glory, their sought-for beauty, being transformed to the divine state of fusion. For they are nourished in the fire and the embryo grows little by little nourished in its mother's womb, and when the appointed month approaches are not restrained from issuing forth. Such is the procedure of this worthy art. The waves and surges one after another in Hades wound them in the tomb where they lie. When the tomb is opened they issue from Hades as the babe from the womb. (Linden 2003, p. 45)

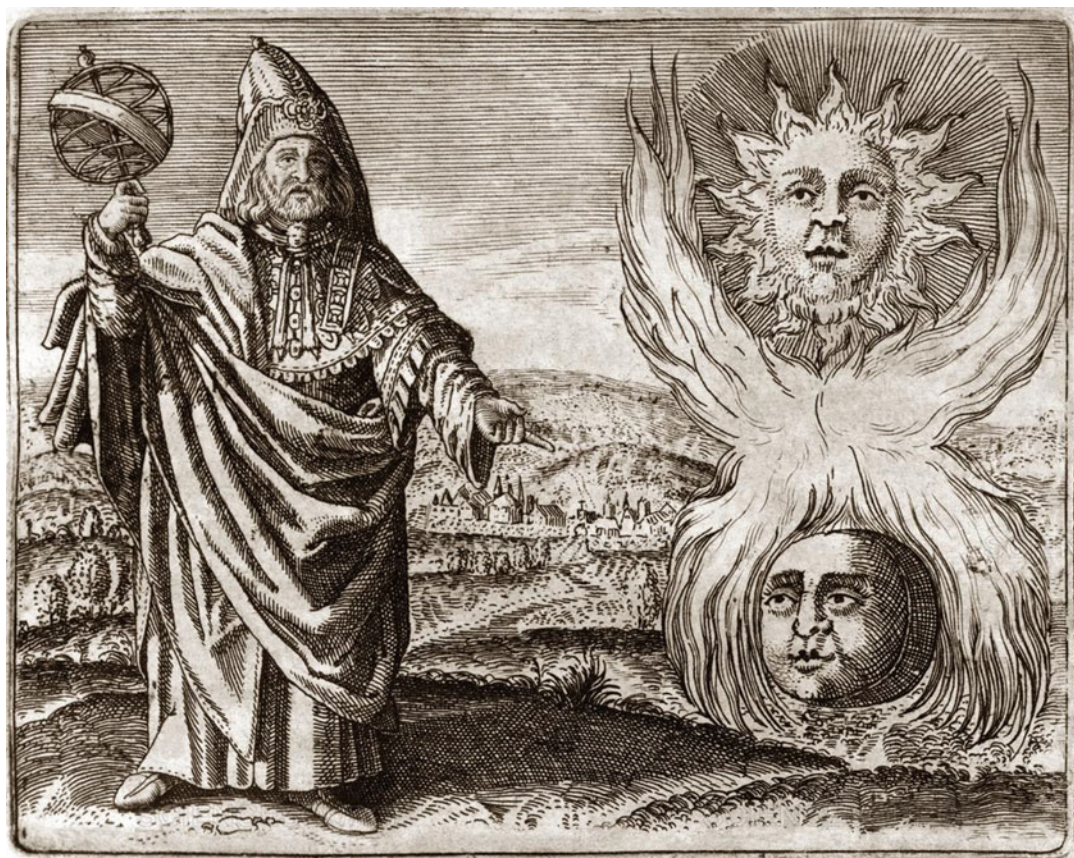
As noted in the quote above, the author uses analogies that deal with alchemical processes as something similar to a living organism. This type of analogy is commonplace in alchemical texts. The metaphor of human birth, for example, which is present throughout the excerpt, is commonly associated with the philosopher's stone. Another element that is present is the perception, common at the time, of an evolutionary line of metals. In this perspective, metals are all made of a common raw material in different evolutionary stages, so that the noblest metals, such as gold and silver, would remain unchanged even after being tested by fire and the most violent chemical reagents. The same would not happen with less noble, less evolved metals. There is, therefore, a vitalistic belief in an active mineral world, which had been repeated in many alchemical texts and symbols. In addition, it is possible to note the influence of Greek culture, in which *Hades* is mentioned, as a place where matter goes through maturation (by fire) until a rebirth arises. Hades, in this case, invokes the Greek belief of the existence of an inferior world, to where the souls of dead people go.

For yet another example, now at the interface with art, it follows an image of Hermes

Trismegistus, known as “the thrice-greatest,” as seen by the artist, writer, and doctor Daniel Stolz von Stolzenberg, in his work *Viridarium Chymicum*, published in 1624 (Fig. 1). According to Principe (2012), the historical representation of Hermes Trismegistus is the product of a complex overlap between Greek and Egyptian mythological and heroic figures, which may be a reflection of the possible emerging from the interaction between such elements.

Hermes was known as a kind of God of knowledge, the source of all wisdom, identified with Toth – the Egyptian God of science – and deeply associated with the history of Alchemy, which as a consequence is sometimes known as *Hermetic Art*. Principe (2013) points out that Hermes' productions did not have a direct relationship with Alchemy, which was instead continually hailed in Antiquity. Among the various tales that related and attached Hermes to the history of Alchemy, there is the story about the Emerald Tablet. According to tradition, the Emerald Tablet had been found in the hands of Hermes' corpse (Pérez Pariente 2016). This artifact contained a very brief text, which summarized the principles of Alchemy into a few lines, thus becoming one of the main symbols associated with the Great Art.

Analyzing the image of Hermes (Fig. 1), it is possible to observe Trismegistus holding a globe on the left, with the Sun and the Moon on the right, which are two common symbols in Alchemy – the Sun, associated with the father figure and with gold, and the Moon, or the maternal figure and the silver. Fire relates to fusion (in the sense of combining) between both metals, as well as the conjunction between the two figures. Still, it is possible to note that gold was seen as a natural evolution of silver and other metals considered inferior, a process which a human could accelerate through techniques involving *chrysopoeia*. Almost as a confirmation of this thesis (for the contemporaries), it has been registered that a natural metallic alloy of gold and silver (known as *electron*) was abundant in several deposits in Ancient Egypt. In other words, *electron* is a “material testimony” of the natural



Alchemy, Fig. 1 Hermes Trismegistus, by Daniel Stolz von Stolzenberg (*Viridarium Chymicum* 1624)

process of “maturation” from silver into gold (or a transmutation). All of this multiplies the possibilities of interpreting the analyzed image, reinforcing Roob’s (2003) remarks on this subject. Perhaps this polysemy is what opens up to different possibilities of engaging either with natural, spiritual, or subjective worlds, explaining why Alchemy remains alive today, as noted earlier.

Meaning Making in the Possible in Alchemy: The Role of Iconic and Symbolic Representations

To understand the process of signification in the construction and representation of alchemical knowledge, semiotics is used. Semiotics can be

understood as the general theory of signs (see section Semiotics) (Innis 2020), which deals with understanding how the process of signification occurs from the creation and manipulation of signs. To broaden this understanding, it is adopted the premise that the human being is a meaning maker (Valsiner 2013). Thus, human history is marked by the human’s ability to interact with the environment and to signify it, based on the creation and mediation of cultural tools called signs. A sign can be understood as any representation of an object that has a meaning to someone (Peirce 1894). Thus, in Alchemy, meanings about Nature were represented by certain types of signs that carried meanings about how phenomena were interpreted by alchemists. Such meanings also represented a worldview at the time, from the intersection of different types of knowledge

arising from mysticism, art, and science itself, as already pointed out.

In this perspective, it is important to highlight the concept of culture used in this entry. Here, culture is not considered as an entity or product of human action. This is because culture is constantly changing and influencing the development of human beings. As stated earlier, signs are cultural tools, created by human beings. In addition to being created, they act in mediation in the construction of new meanings. Thus, culture is considered as an active process of semi-otic mediation (Valsiner 2013), acting on both intra- and interpsychological levels, regarding the human being as an agent in the process of construction of meanings. In other words, alchemical knowledge, represented by iconography and symbolism, is not just a human construction or a cultural product; beyond that, it can be a semiotic system which mediates and regulates human actions, allowing construction of new meanings (at an intrapsychological level) and acting in an influential way in people's lives, even regulating behaviors based on mutual influence between subjects (at the interpsychological level).

Another important aspect is how the process of construction of meaning occurs, beyond the influence of signs in the roles of mediator or regulator. In this sense, it is considered that for every constructed meaning A, there is a non-A (Valsiner 1998), so that meanings coexist. Thus, the new (see section Novelty) (arises from the tension between meanings $A \leftrightarrow \text{non-A}$, which can be related to the idea of the possible emerging in the tension between two perspectives. The very idea of *chymistry*, presented earlier as a kind of hybrid between Alchemy and Chemistry, for example, represents a tension of meanings in the $A \leftrightarrow \text{non-A}$ model, though it paved the way to the subsequent distinction of these two fields of knowledge at the sociogenetic level in later centuries.

As another example of the dynamic $A \leftrightarrow \text{non-A}$, Silva and Macêdo (2018) bring up the philosophical idea proposed by Empedocles (c. 494 – c. 434 BC) of the existence of four elements as the root of all things: air, fire, water, and earth. According to the authors, the tension $A \leftrightarrow \text{non-A}$

is represented by the meaning constructed about the nature of the four elements (abstract $\leftrightarrow$ not-abstract). The idea presented by Empedocles that the elements are principles represent an abstract ontology in which air, fire, water, and earth are “inside” of the matter making part of their composition, even if it is not possible to observe it. This idea coexisted with the notion that these entities also existed in the concrete world, in a non-abstract ontology, as described by Aristotle in *The Metaphysics* (Aristotle 1933) about the qualities of the four elements. Therefore, the idea of the four elements (or their roots) lasted throughout the European Middle Ages, being the basis for building new alchemical knowledge, in the tension of the abstract $\leftrightarrow$ non-abstract, until the “early” chemists’ contestation of the ontology of such entities and the existence, in a much larger quantity, of the so-called chemical elements (Partington 1989). For example, from the seventeenth century, it was speeded the notion that the air was not an element (simple entity) but a mixture of many other kind of substance (oxygen, nitrogen, hydrogen, so on).

Similarly, some of these characteristics of the dynamics of the signification process in the previous examples: in the text attributed to Cleopatra the Alchemist and in the image of Hermes Trismegistus. In both, it is possible to identify some symbolic and iconic signs that represent meanings based on the interactions between mysticism, science, and art. Not only that, but also the tensions that can be explained by the model $A \leftrightarrow \text{non-A}$, which reveals the emergence of the possible in the development of new meanings and in the emergence of Chemistry.

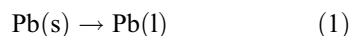
In Cleopatra the Alchemist’s text, it is noted that the fusion is understood as a reaction with fire, to which materials removed from earth rely to reach their full maturity (it is implied that she was referring to gold, that is, to *chrysopoeia*). In this sense, the image of fire plays the role of mediator in understanding the alchemical process that is being described, extrapolating that of a flame. Apparently, Cleopatra is highlighting the purifying function of fire, which destroys but at the same time nourishes the embryo in the womb of Mother Earth, allowing the materials

to exhibit their glory and hidden nature. The idea of fire as a destroyer and, at the same time, a purifier points to the model of meaning $A \leftrightarrow \text{non-}A$, in which there is a tension between meanings: destroyer versus purifier. The image of *Hades* is summoned from mystical meanings – mythical or religious, as the passage through *Hades* (a metaphor for the purifying process of burning in fire) endorses the maturity of the materials. Once again, it is noted the tension of meanings $A \leftrightarrow \text{non-}A$, since the maturity attributed to the materials is compared to a rebirth, at the end of the highlighted section.

In the image of Hermes Trismegistus, it is possible to observe several iconic signs (Peirce 1894), such as the Sun, the Moon, the fire, as well as Hermes' representation itself. Once again, fire represents the process of fusion, which is agreed among alchemists. However, in the representation of Fig. 1, fire has an additional function, aside from the purification proposed by Cleopatra: allowing the union (or fusion) between the feminine (Moon) and the masculine (Sun). This function of fire can be related to the idea of fertility, since the fusion between the Moon (silver) and the Sun (gold) gives rise to a new "metal": the *electron* (Oppenheim 1966; Morioka and Silva 2012). The iconic image of Hermes guiding the possible production of *electron*, from the fusion between gold and silver, expresses the importance of the figure of the alchemist for the Great Art, with the aim of manipulating the natural world. Thus, alchemists' work went beyond mere technique to be somewhat sacred, once again representing a tension of opposite meanings: technical knowledge developed by the alchemist based an empirical notion to understand the nature, and sacred involved in the development of the Great Art (sacred/mystic $\leftrightarrow$ not sacred/scientific).

A point of convergence between the works analyzed (the text and the image) is that both deal with the fusion process. While Cleopatra highlights the role of fire in her text, Daniel Stolzenberg represents fire as it combines silver (Moon) and gold (Sun) in order to create the *electron*. All of this is related to the processes of signification around alchemical signs. However, it

is seeker to approach the possible on the threshold between Alchemy and Chemistry, so one may be wondering: where is chemistry in all of this? What remains of these processes and what changes? Currently, one can associate the studied alchemical processes with two transformations that, in a certain way, show similarities with the meanings attributed in Alchemy: a change in physical state (melting) (Eq. 1).



Taking as an example the simplified representation of fusion of lead (Eq. 1), which can be found in any chemistry textbook, it is possible to see the use of some symbolic signs, whose meanings have been defined in the scientific field of Chemistry: "Pb" indicates the element (or elementary substance), a way of representing the chemical elements that follows from Jacob Berzelius' (1779–1848) proposition in 1813. The letters "s" and "l" between parentheses represent, respectively, the solid and liquid states of lead, before and after the transformation occurred (the fusion process). In turn, using equations (like the one shown above) to express a chemical reaction was proposed by Antoine-Laurent de Lavoisier (1743–1794), but initially with the "equal" sign (=) between reagents and products. It was only in the late nineteenth and early twentieth centuries that arrows began to be used for indicating a chemical or physical transformation in equations (Alvarez 2012). In any case, after this long leap in history, it is possible to notice that the iconic and symbolic representations, of polysemic and allegorical language, used in the alchemical period, gave rise to a type of language that prioritizes conciseness and clarity of information, so that the set of possible interpretations from such representation is drastically reduced. However, it should be noted that, aside from representation, furnaces, melting pots, and other instruments characteristic of *chrysopoeia* are still familiar in the practice of chemists today. Therefore, it represents a metonymy of the tension between change and permanence, which it was explored throughout this entry.

Conclusions

Though it may seem unlikely, the idea of the possible (Glaveanu 2020) in Alchemy resides in the fact that Chemistry, now recognized as scientific knowledge, originated from active dialogue with Alchemy, whose oldest traditions (previous to those of *Chymistry*) seem to be precisely the antithesis of what came to be Chemistry – with regard to relations with mysticism and art.

As previously highlighted, Chemistry did not arise from a rupture with Alchemy, but instead as a movement in which a certain set of practices, which characterized Alchemy, gave way to what came to be Chemistry as it is known today. It was, therefore, a more gradual process, as Klein (2015) describes for the so-called “Chemical Revolution” years later, at the end of the eighteenth century. Thus, *Chymistry* was understood as a hybrid between Alchemy and Chemistry in the emergence of the possible between these two fields of knowledge, considering that Chemistry had been developed as a science between the sixteenth and seventeenth centuries. Accordingly, at this time, some tensions with philosophical ideas come up, such as classifying water, earth, air, and fire as elements, which is, not exclusively, but ultimately refuted in the book *The Sceptical Chymist* (Boyle 1800). At the same time, several theories whose roots went back to alchemical ideas also existed, such as the existence of a fluid that caused bodies to burn, called *phlogiston* (Klein 2015). Therefore, these tensions along the chemical revolution, in which the new is established from the contestation of the old, while also generates hybrids that coexist on the threshold between the old and the new. This is also true between Alchemy ↔ Chemistry, with the possible emerging from this tension and generating *Chymistry* as a hybrid of the existing tension between A ↔ non-A.

Based on the examples discussed in this entry, Alchemy developed from interactions between mysticism and art, both of which influenced the process of transitioning from Alchemy to Chemistry. The vitalism associated with metals, the destructive and purifying nature of fire and the

relationship between mythological figures and alchemical materials or processes demonstrate how nature was understood and manipulated, allowing the development of techniques and materials used today by Chemistry, such as fusion in metallurgy and formation of metal alloys.

Cross-References

- Novelty
- Semiotics

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if?,” Alternate Histories fulfill an important function in human thought about contingency, possibility, and change, acting as a stimulus, as an heuristic, or as a tool for the conscious manipulation of opinion and action. Defining Alternate History broadly as a fundamental feature of the way humans explore possibility, this entry discusses prominent examples from literature and film, politics, religion, scholarship, and sport. It explores conceptual and ethical boundaries, inviting the reader to consider the function of Alternate Histories within societies, and what their use tells us about the way humans think about past, present, and future.

Keywords

Alternate History · Alternative facts · Collective memory · Contingency · Counterfactual thinking · Diegesis · Historical fiction · Possible worlds · Post-truth · Science fiction · Thought experiments

Alternate History

David Hamon and Dirk Niefanger
Friedrich-Alexander University Erlangen-
Nürnberg, Erlangen, Germany

Abstract

Alternate Histories are stories told in a version different to the one dominant in collective memory and are a common feature of human culture, present and past. They serve as a tool for exploring the boundaries of the possible and indeed are sometimes used to expand these boundaries. While historical narratives which diverge conspicuously from recorded history are often found in literature and film, Alternate Histories are in fact a common feature of our everyday lives: We find them in private conversations about societal change; in the appraisal of historical events of public concern; and particularly in the realms of the political, the religious, or in sport. As the kinetic exploration of the question “What

Alternate History

The term Alternate History (“alternative history” in British English, or “uchronie”) describes all possible forms of narratives of the past which first are of public concern, and second, differ materially from historical narratives in common circulation. Both types of historical narrative, alternate and common, ostensibly claim reference to genuine occurrences, yet Alternate History contains divergences which may be signposted, or go unacknowledged. This definition through apposition to “historical narratives in common circulation” as opposed to “historical truth” assumes that such truth remains forever elusive: History exists only as a narrative, often expressed in textual or image form, and is invariably subject to rhetorical and esthetic distortion (White 1981, 2010). Even material sources must be interpreted and incorporated into a narrative.

The moment of origin of any Alternate History is almost always a concrete point of divergence, from whence this world or another is differently

perceived, interpreted, narrated, or created. Through their pivotal nature, these moments illuminate a latent property of every history told or lived, the existence of moments of contingency, determined by surrounding events and the more-or-less random paths of possibility which emanate from them. In highlighting the contingency innate in every story, Alternate Histories impress upon us that it might all have been different and been told differently. They show us that our lives may have differed.

According to our definition, the phenomenon of Alternate History surrounds us in everyday communication. We can observe examples in private conversations about societal change, in the appraisal of historical events of public concern, and particularly in the realms of the political, the religious, or in sport. To define Alternate History as more than just as a specific category of text (a genre or subgenre of science fiction) is to defy dominant lines of literary-theoretical thought. Yet in view of the predominance of the phenomenon in diverse areas of modern culture, it seems apposite to take a more open and yet nuanced approach. The telling of stories, of history, is one of the most elementary acts of human culture (Koschorke 2012), and we understand Alternate History simply as a story told in a version different to the one dominant in collective memory.

In presenting historical alternatives, these stories serve a purpose. They attempt to facilitate communication by bringing clarity in the expression of a position, by contributing to the persuasive power of an argument, or by highlighting the potential for correction of perceived social or other ills, etc. Just as much a common (but not necessary) feature of Alternate History as the conscious – and possibly carefully exhibited – signposting of divergence, is the latent, hesitant, or sharply critical reference to the dominant version. Indeed, through this reference manifests often an added rhetorical, polemical, argumentative, didactic, political, or ethical value, which may serve a purpose in the present, near, or distant future.

However, we cannot view every form of alternative reference to the past as Alternate History, as not every such reference can be called “history.”

Instead, the term refers only to those stories which can contribute to the interpretation of societal, political, and cultural change (including potential future change). Only this type of narrative is defined as history and differs thus from most private or family memories and stories.

Accordingly, Alternate Histories exist always in relation to the collective memory of a particular time (Halbwachs 1950; Ertl 2017), and to a culture of memory in a certain place, with its specific social practices (Burke 1989, 97–113). This means that Alternate Histories cannot be fully understood without specific reference to their social context. Put simply, if an audience does not know the dominant version of the story to which an Alternate History makes reference, the added value will be missed. A specific understanding of an Alternate History is therefore bound to a specific “cultural memory” (Assmann 2011a, b), and the characteristics of this cultural memory, its retrievability and its potential as a tool for (philosophical) discovery, are of great relevance. One could even propose that an ideal purpose for Alternate History is the comprehension and critical reflection of a particular cultural memory. Yet here, we must note that the societal process of remembrance may be destabilized by Alternate Histories which serve to relativize and call into question the validity of a particular dominant cultural memory. Particularly in the social and political worlds, Alternate Histories thus harbor a dangerous potential to affect social cohesion and societal function.

Alternate History and Politics

Although the term “alternative facts” was first introduced to political discourse in 2017 by Kellyanne Conway, press secretary of former US President Donald Trump, the phenomenon it describes has existed much longer, probably just as long as human political interaction itself. Political goings-on in particular are open to interpretation according to ideologies or worldviews, and there is much room for conscious manipulation. A certain selection, evaluation, creation, and weaponization of evidence gives rise to the building

blocks of a politically effective narrative, which can differ from established versions, particularly where falsified facts are present in the architecture. If skillfully inserted into public discourse, “alternative facts” can contribute to a change in the structures of power, the destruction of societal consensus, or the destabilization of a political system – especially in western-influenced democratic societies (Rosenblum and Muirhead 2019).

Prominent recent examples of such “gaslighting,” consciously weaponized in political discourse, can be found in Donald Trump’s revisionist relationship with clear historical fact. The former US President utilized Alternate Histories in order to present himself as successful, to conceal potential shortcomings of his government, or to nurture a particular political vision. It was to these ends that he claimed the presence of a larger number of spectators at his inauguration than were truly recorded; that he denied having tested positive for COVID-19 before his first presidential debate with Biden; and that he contested the validity of the results of the 2020 US presidential elections. One might assert that “Truth Social,” the social network he created after his time as President, exists also to spread and utilize politically the power of “alternative facts,” or Alternate Histories.

In Central Europe, one particularly impactful Alternate History was the *stab-in-the-back myth* (*Dolchstoßlegende*), a widespread conspiracy theory propagated by the upper echelons of the German Army after the end of the First World War. Originating in a misrepresentation of statements made by British General Frederick Maurice, this particular legend was popularized by Paul von Hindenburg (later German Reichspräsident) through his statements before an investigative committee of the Weimar National Assembly in 1919. It alleged that it was neither the lesser fighting power of the German military, nor the poor leadership of those in command which led to defeat in war. Instead, the loss was instigated by “unpatriotic” elements of domestic society such as social democrats, intellectuals, and Jews through their actions at home. The German Army thus remained technically undefeated in combat. This myth and its prominence contributed materially to the destabilization of the Weimar and Austrian

Republics, and to the strengthening of right-wing conservative, fascist, and national socialist movements throughout Central Europe.

Alternate History and Historical Scholarship

There is a clear distinction between the problematic weaponization of counterfeit histories on the politico-ideological battlefield, and the construction of a contrafactual history for heuristic purposes in scholarly discourse (Evans 2013). In this context, a constructed history is a thought experiment in historical scholarship, methodically akin to similar practices in (analytical) philosophy (brain-in-a-vat, etc.). In contrast to Alternative Histories in political discourse, those in historical scholarship keep their constructed and experimental nature visible. Such histories which conspicuously diverge from empirically attainable truth can highlight continuities, divergences, structural relations, key agents, exigencies, and assumptions of responsibility relative to dominant narratives. As a form of presentation, Alternate Histories may also enable a greater didactic effect, or simply be more fun, and their value in teaching is thus indisputable. This methodical historical speculation must be kept distinct from examples of *future history* – a fictitious history regarding future events – whose purpose tends more toward entertainment (e.g., Jack London: *The Unparalleled Invasion*, 1914).

The use of counterfactual history in the exploration of historical relationships is naturally contentious, yet it is widespread in value-based judgments and considerations. Here, the boundary between targeted conceptualization and fantastical speculation is blurred (Did the Hiroshima Bomb truly save the lives of thousands of American soldiers? Would millions of Jews have survived if Georg Elser’s 1938 attempted assassination of Hitler in the Bürgerbräukeller had been fruitful?, etc.).

The methodical use of Alternate Histories in scholarly discourse must be distinguished from the spread of ideologically motivated, obscured, and obscurant counterfeit or pseudohistories (David Irving’s Holocaust denial, etc.). These

histories often have a large following, with members uniting in a sect-like manner and speculating on large-scale conspiracies. Counterfeit histories may be spread without an overarching political objective, intending instead to attract attention, popularity, or garner economic advantage. For example, in order to highlight the barbarism of the Middle Ages and to contrast it with the more favorable contemporary civilization, the nineteenth century produced the phenomenon of the Iron Maiden. This brutal torture device was allegedly put to use in medieval torture chambers and yet was in reality entirely invented (it can now be seen in the San Diego Museum of Man or in the Kriminalmuseum in Rothenburg ob der Tauber, Bavaria).

The scholarly value of Alternate History has been formally recognized. In 1993, Douglass Cecil North and Robert William Fogel received a Nobel prize for a process of counterfactual analysis in economic history, yet other theories have achieved greater popular renown. Herbert Illigs' *The Phantom Time Hypothesis* is one such example. A publicist by trade (and untrained as a historian), Illigs asserts that the entirety of mainstream medieval historiography is in fact a long-accepted Alternate History, arguing that a period of 300 years between 614 and 911 was invented by contemporary rulers for reasons of power. After scrutiny, these theses seem to be guided less by methodical interest, and more by a desire for media attention and economic gain.

Alternate History in Religious and Ecclesiastical Thought

The importance of the dissociation and occasional appropriation of Alternate Histories in religious discourse is aptly demonstrated by the process of canon formation in almost all religions (Tanach in Judaism; Holy Scripture in Christianity, with differences in Roman-Catholic, orthodox, and evangelical churches; Qur'an; Daozang; etc.). Of course, historical truths in religious thought are based upon different types of qualification as the truths of historical discourse. However, even – or perhaps especially – here, one can observe various portrayals of events in competition. In the process

of canonization, historical narratives are accepted as truth and put to use, or they are rejected and discarded (Biblical Apocrypha; apocryphal acts of the apostles; apocryphal gospels; letters; etc.). The reason for entry into canon and survival as an alternative tradition varies. It is due to alleged divine revelation; due to resolutions of religious bodies; or simply due to an inexorable creeping spread of the narrative. With this sort of genesis, one naturally finds certain regionally, socially, or ethnically delineated differences in validity of alternative narratives. Indeed, it is not seldom that Alternate Histories in religion come to form the basis of separatist religious practices and sect-like church formation. Here, one finds not only alternative religious traditions forming the basis of belief (Pentecostalism; New Apostolic Church; etc.), but also church-related historical events which are differently interpreted or narrated (Rastafari; Falun Gong; Jehova's Witnesses; Adventism; etc.).

One well-known expansion of canon (therefore a religious Alternate History) is Joseph Smith's *The Book of Mormon* (prophetic revelation or 1830), which became the religious basis of the Mormons, or *The Church of Jesus Christ of Latter-day Saints*. In it, the narrator tells of religious experiences and personal divine revelation. The spread of this narrative had a significant influence on concrete political events in Illinois (e.g., the murder of the presidential candidate Joseph Smith) and on the development of a fairly widespread religious community.

Alternate History and Sport

Alternate histories are found even in those places where we are used to seeing clear victors and losers, concrete rules, and – with the use of modern technology – fully transparent processes. In sport, three types of impulse tend to set an Alternate History in motion: suspected cheating; alleged action on the part of those not authorized to be involved; and controversial decisions by referees and other officials. Accordingly, the story of England's victory against Germany in the 1966 football World Cup is told in each country in an entirely different manner.

Not only the competition, but also the biography of the sportsperson themselves is relevant for the construction of divergent narratives in historical sporting achievements. This is shown in the different judgments passed upon sportspeople such as Lance Armstrong in cycling (doping; involvement in health politics; and cancer-illness) and Muhammad Ali in boxing (conscientious objection to military service; political statements; and Parkinson's disease). In both cases, autobiographical texts and interviews contributed to the biased stylization of these sportspeople in alternative narratives.

In the field of motivational coaching in sport, Alternate Histories are well established as a potent means for improving performance. In this context, some examples appear as mere grandiloquence, others as conscious misrepresentation, all for the aim of wrestling the seemingly impossible toward the frontiers of possibility. Surprise victories of underdogs often result from such motivational tricks (Greece versus Portugal, 2004; Muhammad Ali versus Sonny Liston, 1964).

Alternate History as a Cultural Phenomenon

In the field of culture, Alternate History can be understood as a type of fictional diegesis defined primarily by content. The phenomenon occurs across different genres and media (literature, films, games, etc.) and can therefore be described *à la* Genette as “a universe rather than a train of events (a story).” “The diégèse is therefore not the story but the universe in which the story takes place” (Genette 1988, 17).

The diegeses of Alternate Histories in culture originate from particular moments of our real history, constructing from these entirely new worlds. They can reach far into the future, or at least force us to think about our future differently than we otherwise would. For as with all historical fiction – an umbrella term for all forms of fictional speech and script which deal with history – Alternate History is based superficially on the past but in fact provokes thoughts of change in the present and future. Every sketch of an Alternate History indicates just as much the deficiencies of reality as

it does possibilities for improvement; indeed these possibilities are “played out” and “tested” in various scenarios. In this sense, diegeses of Alternate History construct multifarious spaces of possibility in past, present, and future. They begin with a point of divergence, from whence history marches forward along a different path to the one we recognize. The impulse for this comes from the conspicuous modification of well-known and relevant historical events (Hitler's suicide; Kennedy's murder; American Civil War; etc.).

Alongside simple linear narration of Alternate History (Philipp K. Dick: *The Man in the High Castle*, 1962; Robert Harris: *Fatherland*, 1992), one also finds related constructions such as the experience of an historical world running parallel to our own (Stephen Fry: *Making History*, 1996; Eric Flint u.a. *1632/Ring of Fire*, 2000 ff.). From the perspective of a modern-day audience, one could also interpret certain examples from the realm of science fiction as a specific type of Alternate History, where the real future has overtaken a constructed one (Arthur C. Clark/St Stanley Kubrick: *2001. A Space Odyssey*, 1968, George Orwell: *Nineteen Eighty-Four*, 1949). A notable characteristic of Alternate Histories in culture is that they often contain futuristic inventions – typical elements of science fiction. In Thomas Ziegler's *Stimmen der Nacht/Voices of the Night* (1984/1993), we find little espionage-robots just after 1945; in Kerry Conran's film *Sky Captain and the World of Tomorrow* (2004), there are powerful drones active in 1939; and in Timo Vuorensola's *Iron Sky* (2012), the Nazis land on the moon in 1945. As a sort of thought game, Alternate Histories are not seldom utilized for satirical effect, using forms such as parody and travesty, alongside more serious variants such as the contrafactum and the Dionysian imitation.

One famous example of a global Alternate History is the TV-series *The Man in the High Castle*, (Amazon 2015/2019), which tells the story of a United States defeated by the German national-socialists and the Japanese fascists. The point of divergence is the 1947 victory of the Axis powers in the Second World War, who have divided the world between them. Just a few isolated, impoverished, more-or-less independent zones are still in existence, including in the

USA. A Cold War hangs between the Japanese and German empires, with replaying moments of the real postwar history with alternative power-relations and ideologies. As the alternative diegesis, the series points to a parallel world documented in films. These films fall into the hands of the political resistance and depict a world not dissimilar to our own: The use of an atomic bomb is shown, and the Allies have won the war.

To a far greater extent than the original template, Norman Spinrad's novel *The Iron Dream* (1972), the series raises the question as to whether esthetic motives in production have been allowed to dominate over ethical and didactic ones. One might ask whether Alternate History has provided a vehicle for a concealed indulgence of fascist esthetic (Haupts 2016, 148). This could be found in some of the extravagant marketing ventures (even partially forbidden) which played on visual taboos, and in the ostentatious architectural design of the fascist worlds depicted. Although both aspects doubtless promote the success of the series, the ethical question must be asked as to whether the ambitious marketing and design elements – often superfluous for the story – can be justified in the context of real history (see below passage on philosophical esthetics).

Examples of Alternate Histories can be found in diverse areas of present culture, brought to life through various media: In novel form (Ungulani Ba Ka Khosa: *Ualalapi*, 1987; Christoph Ransmayr: *Morbus Kitahara*, 1995; Philipp Roth: *The Plot Against America*, 2004; and Martin Walker: *Germany 2064*, 2015, inspired by ATKearney's FutureProof strategy), in film (*Philadelphia Experiment II*, 1993; *Watchmen*, 2009, David Wnendt: *Er ist wieder da*, 2015, inspired by the book from Timur Vermes), in TV-series (*Star Trek: The City On The Edge Of Forever*, 1967; *The Man in the High Castle*, 2015 ff.), in docufiction (*Der dritte Weltkrieg*, 1998; C. S.A., 2004), in video games (*Civilisation*, 1991 ff.; *Wolfenstein 3D*, 1992 ff.; *Command & Conquer: Red Alert*, 1996), and in role-playing games (*GURPS*, 1986 ff.; *Crimson Skies*, 1998 ff., und *living history* projects). Alternate History is discussed in online platforms and electronic

magazines (Forum *Alternate History Discussion*, 2010 ff., *Changing The Times*) and has been the subject of scholarly research since the 1950s, although not intensely until the 1980s (Prucher 2007, 4–5).

In the context of philosophical esthetics, Alternate History invokes the traditional creative freedom of historical fiction (e.g., Shakespeare, Racine, Lessing, or Schiller). The basic argument always runs along the lines of Aristotle (Poetics, 9): Real history may be changed in a fictional context if it serves the intended esthetic, didactic, or political function. However, main characters (Hitler, Ivan the Terrible, etc.) and most important events (Holocaust, American independence, etc.) may not be gratuitously changed. This poetic license is interpreted by Alternate Histories in the widest sense, resulting in brave excursions into regions often regarded by traditional historical fiction as taboo. At the same time, however, the diegeses of Alternate History presuppose and require knowledge of true historical actors and the common narrative of history. Only then can they impart their intended effect, especially regarding future political and social development. Where this effect is present, Alternate Histories are powerful, and not just as stories. Indeed, they say more about the way we think about the future and the familiar models we use to this effect, than they do about the past.

Summary

Alternate Histories are stories told in a version different to the one dominant in collective memory and are a common feature of human culture, present and past. They serve as a tool for exploring the boundaries of the possible and indeed are sometimes used to expand these boundaries. While historical narratives which diverge conspicuously from recorded history are often found in literature and film, Alternate Histories are in fact a common feature of our everyday lives: We find them in private conversations about societal change; in the appraisal of historical events of public concern; and particularly in the realms of the political, the religious, or in sport. As the kinetic exploration of the question “What if?”,

Alternate Histories fulfil an important function in human thought about contingency, possibility, and change, acting as a stimulus, as a heuristic, or as a tool for the conscious manipulation of opinion and action.

Cross-References

- [Aesthetics](#)
- [“As If” Thinking](#)
- [Curiosity](#)
- [Determinism](#)
- [Divergent Thinking](#)
- [Dystopia](#)
- [Fiction](#)
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- [Social Change](#)
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- [Speculation](#)
- [Storytelling](#)
- [Utopia](#)
- [“What If” Thinking](#)

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American Pragmatism

Steven Lybrand
Palo Alto, CA, USA

Abstract

By the end of the nineteenth century, a small group of North American intellectuals known as the Pragmatists had laid the foundation for what became the dominant movement within American philosophy for the next half century. Charles Sanders Peirce, William James, and John Dewey were part of the first generation of thinkers to confront the implications of Darwin's theory of evolution by natural selection. While different in many ways, all three agreed that previously held beliefs regarding the “possible,” the “a priori,” and the “necessary” in thought and/or nature had been upended by Darwin's findings. With species and ontological categories no longer established by design, the category of “the

possible” became alive in a way it had not been previously. Deterministic philosophies of both idealist and materialistic lineage were replaced by more experimental approaches to the evaluation of beliefs and practices. The original Pragmatists fashioned themselves as revolutionary thinkers, with intellects and personalities custom-forged so as to be able to offer unique perspectives regarding the possibilities of contemporary life. These thinkers/practitioners might be seen as potential exemplars for those who wish to work firsthand with complex experiences and cultural phenomena. This entry will review the major ideas of the American Pragmatist lineage over time and provide a rough sketch of the *possibilities* for a uniquely inspired form of ***Pragmatist Intellectual Craftpersonship***. This entry concludes with a brief review of the contributions of the Neo-Pragmatist Richard Rorty and some of his critics – including the so-called New Pragmatists – to bring the story of Pragmatism up to date.

Keywords

American Philosophy · Evolutionary Theory · William James · Charles Sanders Peirce · John Dewey · Richard Rorty · C. Wright Mills · W. E.B. Du Bois · Experimentation · Craftpersonship · Cultural Analysis · Sensibility · Race Relations · Sociological Imagination · Democratic Participation · Neo-Pragmatism · Experimental Philosophy · Feminism

Synonyms

Creativity; Creative Problem-solving; Creative Possibility; Creating the Future; Decision-making; Determinism; Experiences of Adversity and Creative Possibility; Feminisms; George Herbert Mead; Open-mindedness; Openness to Experience; Possible in John Dewey; Possible in Philosophy; Possible in Psychology; Reality; Self-Direction; Sociological Imagination

The Possibilities of Pragmatism: The American Tradition(s)

In 2009, the American journalist A.J. Jacobs published a summary report of a number of informal experiments he had conducted over the preceding 15 years. In *My Life as an Experiment: One Man's Humble Quest to Improve Himself*, Jacobs recounts his explorations within the most popular genre of the American book publishing industry: the self-help book (Jacobs 2009). In the bookstores that survived the online market incursion of the early twenty-first century, shelves and even whole aisles are devoted to the almost endless variants of the self-improvement manual (by the second decade of the present century, subscription websites and podcasts have become the favored conduit for the self-help “content providers”/entrepreneurs). Jacobs undertook a series of tests which probed some of the ideas, beliefs, proposals, practices, and worldviews prevalent in the genre using himself as the subject (earlier drafts of the work were entitled *The Guinea Pig Diaries*). Reminiscent of William James’s participant observation studies of transformative religious beliefs and practices more than a century ago (James 1902), Jacobs says he undertook the experiments because he was fascinated by all that was available to people who were “. . . committed to the possibility of change” (Jacobs 2009). If the American experience with self-improvement practices is the sampled universe (and Aristotle’s canonical distinction between “Possible” and “Impossible” events/knowledge is still seen as viable), the “Possible” and “Potential”/“Contingent” stocks continue to trade as high as they always have in America, while the darker, more skeptical “Impossible” and “Necessary” shares continue to trend downward (except perhaps in the sociology, environmental studies, and literary criticism departments) (Aristotle 1952).

The journalist Jacobs follows in a long line of American intellectual and cultural explorers – led by those historically identified as “Pragmatists” (in the philosophical sense) – who believe that discerning differences between various belief systems and philosophical perspectives cannot be decided in the abstract but must be investigated

personally by the researcher him or herself. The early Pragmatists, Charles Sanders Peirce (1839–1914), William James (1842–1910), and John Dewey (1859–1952), argued that distinguishing between the possible and the impossible in logic, philosophy, and life cannot be established by dicta, determined by tinkering with the ancient *a priori* or modal categories of possibility/necessity/actuality/contingency/potentiality or even by the long-established scholarly practice of writing books based on other books (Peirce referred to those who chose the self-referential, scholarly approach as “philosophers bred in theological seminaries”) (Peirce 1897). Positioning themselves as part of the first generation of thinkers who understood the radical implications of Darwin’s theory of evolution for philosophical and social analysis, the Pragmatists dismissed much of nineteenth-century thought as nothing more than the idle speculations of those taken with absolutist, otherworldly specters. In contrast, the Pragmatists advocated a muscular firsthand examination of the beliefs and practices of a new generation of recently urbanized Americans who James saw as confronting “live possibilities”; that is, “modern” individuals coming to grips with, in the words of Ian Hacking (1936 -) “. . . real life, real knowledge, real expertise” (James 1907; Hacking 2007).

The Pragmatists’ methodological principles held that for one to understand the live possibilities of both self and others, each individual must, in an unadorned, personal way, “take a look” around the actual world and see which ideas and practices survive the tests of that world. For Peirce and James, a proper test was not an armchair academic exercise but a careful and systematic sorting of the real-world *consequences* of ideas, concepts, and behaviors. As part of this rigorous vetting process, one would compare one’s own conclusions with those of others – both predecessors and contemporaries – who have worked the same experiential territory and who have conducted their own customized tests of what was deemed to be possible (at least potentially). While such a Pragmatist DIY (do-it-yourself) exhortation may strike some as naive, especially in a post-Kuhnian, postmodern world, this “take a

look” approach of a journalist such as Jacobs is, in miniature, the upshot of the Pragmatist message since Peirce, James, and Dewey first announced it in the late nineteenth century. Although made more complicated by the various forms of post-modern skepticism regarding so-called “raw experience” or “empirical” evidence, the “sort it out for yourself” message continues to resonate both in parts of the academy and in the larger public which confronts the plentitude of cultural phenomena daily.

Although this entry will not explore the topic, there is another meaning of “American pragmatism” extant. This nonphilosophical sense of “being pragmatic” concerns a certain no-nonsense, bottom-line, “show-me-the-money” sentiments and behaviors popularly associated with a stereotypic conception of American society and culture. Exploring this more brawny cultural imagery of everyday matters would require more extended treatment. Thus, this entry focuses on North American philosophical Pragmatism.

If there is one attribute the American Pragmatists covered in this entry share (even when differing on others), it is an abiding commitment to the idea that the meaning, value, and sometimes the truth of significant beliefs and values can best be determined by looking, not primarily backward to the past, but ahead to the future, in search of the possible consequences of holding and acting upon particular views or beliefs (Thayer 1968). Related to this “focus-on-the-consequences” commitment, the Pragmatists under consideration here promoted an open-ended search for potentially useful knowledge, understanding that, at best, this knowledge would be of a provisional nature only. They all opposed a notion of inquiry that promised to reach an illusory, final certitude or Truth with a capital “T” (the abhorrent “Eternal” or “Absolute” in nineteenth-century thought). James’s formulation of this provisional conception of knowledge in a post-Darwinian world focused on the brain as an exploratory, hypothesis-creating organ that evolved to deal with an ever-changing environment. In this context, he said, “The brain is an instrument of possibilities, but of no certainties” (James 1890).

Utilizing a similar exploratory mindset, Jacobs describes his experiments and reviews the consequences that followed from them. He also discusses what possibilities (in the form of new experiences, expanded behavioral options, even awareness of alternative/possible worlds, i.e., worldviews) his experiments opened up for him personally. A small sampling of his reports is offered here as a contemporary entrée into the American Pragmatist worldview in which the demand that we test out for ourselves the various and competing beliefs and practices circulating in society can be considered as the most serious intellectual (craft)work a curious and engaged person can hope to do. The contributions of a small number of thinkers within the Pragmatist tradition will then be reviewed, starting with the original three of Peirce, James, and Dewey. Following a core Pragmatist principle, the remainder of the entry will trace out the *consequences* of some of their beliefs in the form of their influence on a select number of thinkers who followed their lead throughout the early and mid-twentieth century. The entry also looks at the contributions of the Neo-Pragmatist Richard Rorty (1931–2007) and some of his recent critics – the so-called New Pragmatists – to bring the story of Pragmatism up to date.

Working with Experience Firsthand

The centerpiece of this entry will be to offer up a rough sketch of the *possibilities* for a uniquely inspired form of ***Pragmatist Intellectual Craftpersonship***. The Pragmatists discussed here were all exceptionally creative and methodologically sophisticated thinkers who saw themselves as confronting the modern world in very personal, particularized ways, with themselves as the self-created instruments to be used in analysis. They fashioned themselves as revolutionary thinkers, with intellects and personalities custom-forged so as to be able to offer unique perspectives regarding the study of the possibilities of modern life. All those discussed here can be held to be possible exemplars for those wishing to work with and handle complex experiences and

phenomena firsthand, in vital and perceptive ways. The historian of ideas Jacques Barzun (1907–2012) asserts that William James preferred to analyze experiences personally and full on; in James’s own words, James said he preferred to “handle them bare” (Barzun 1983). As an example of this type of approach, James conducted a study of religion not by relying solely on theological treatises or other abstract/formal systems of metaphysical thought but by attending to the actual (and recorded/recounted) experiences of people who claimed to have been in touch with “the unseen” or other alternative-world phenomena (James 1902). For James, this engagement required he personally participate in religious rituals, including séances and other intense intersubjective happenings to observe/experience the phenomena himself. James thus advocates that one start one’s study of any subject afresh, taking a look for oneself even if the weight of scholarly tradition and societal custom declare the matters as fully settled by previous or current “authorities.” This “bare hands” approach to working with cultural material might be said to best characterize the craft-like, DIY interpretive practices of the Pragmatists. Their form of first-person treatment is the forerunner to Jacobs’s informal studies, the latter reviewed briefly here to give a flavor of how a contemporary American journalist exemplifies the craftwork tradition made famous by Peirce, James, Dewey, and others (in a European context, this craft form of cultural analysis or bricolage can be seen in its full flowering in the work of Roland Barthes).

Intrigued by a research study he read of the deeply corrosive effects of a world overrun by too many interpersonal demands and technology-driven cognitive distractions (an accentuation perhaps of William James’s reference to the “great blooming, buzzing confusion” [James 1892–1958]), Jacobs spent a month attempting to limit his waking hours to “unitasking” (the proposed therapeutic alternative to multitasking). As he attempted to focus on completing one task at a time, he quickly realized that his frenzied *habit-driven* everyday life patterns (such cognitively dulling habits being another realm explored in depth by James) were accompanied by so much

mental noise – accentuated by his obsessive real-time monitoring of his personal technology devices – that he was surprised he had previously been able to get any work done at all. As part of the experiment, Jacobs started using a manual typewriter while working (a strategy implemented to avoid the temptations of the Internet). In an informal phenomenological sense, Jacobs reported noticing interesting things that occurred in the sensations he perceived when typing on a manual typewriter and in his perceptions when seeing his words appear instantaneously on the *material page* (bypassing the computer-to-printer-to-page loop).

Curious about how this immediacy was affecting his thought process and written expression, he recalled that Nietzsche's writing style changed when his memorialization practice shifted from writing longhand to composing on a typewriter. In an insight that would have resonated with Peirce, James, and Dewey (all of whom were interested in how the direct, personal nature of self-discovery affected one's everyday behavior and practices), Jacobs seemed to grasp in an intimate way that the shift in Nietzsche's writing style – from a "more flowing and discursive (form) to more telegram-like, bulleted, and epigrammatic" style of his later work – was perhaps due to a shift in the material technology he used (Jacobs 2009).

After a month of this unitasking experiment, Jacobs discovered, among other insights gained, that he was able to, in his own words, get control of his "brain's steering wheel" (as to the "consequences" of this test, he reports he was able to focus his mind enough to drive a car for the first time in years, an unexpected expansion of some real possibilities in his life). Peirce, in a practice he shared with his fellow Pragmatist James, was himself interested in the expansion of possibilities in one's intellectual life through, paradoxically enough, the channeling and disciplining effects of habits on one's thoughts that come from paying close attention to the effects of small changes in one's personal thinking and the consequent conduct (paradoxical in the sense of the nonobvious effect that a *narrowing* of focus can lead to an *expansion* of imaginative possibilities) (Peirce 1878; Hudson 1966).

In a craft practice characteristic of the work of some later Pragmatists, Peirce and James both developed a lifelong habit of recoding in make-shift laboratory notebooks their everyday experiences, including the laying down of trail markers so that they could return to these experiences and problems later (well into his declining years, Peirce carried a small notebook on his person for the immediate capture of everyday observations and reflections – his "experiments" – even if his entries shrunk to just 25 entries per day by the end of his life!) (Feibleman 1946). In an article discussing the implications of a pragmatically inspired scientific attitude for the enlightened conduct of the proverbial everyday person, Peirce says, "If a man burns to learn and sets himself to comparing his ideas with experimental results in order that he may correct those ideas, every scientific man will recognize him as a brother, no matter how small his knowledge may be" (Peirce 1896). It is just this connection between the craft handling of everyday experience and the possibilities of knowledge and conduct that connects in a direct line the early Pragmatists to the later American scholarship in behavioral economics, judgment, and decision making and the shelves of practical books on making better decisions in everyday life (Duke 2020; Kahneman 2011).

In another experiment, Jacobs practiced something referred to as "Radical Honesty," in which he pledged to tell no lies – no matter how trivial or pressing the demand for "white-lie" social decorum. Reminiscent of Harold Garfinkel's (1917–2011) ethnomethodological "breaching experiments," Jacobs found it momentarily liberating to operate without the stultifying overlay of society's mores while talking with others (Garfinkel 1967). Jacobs also discovered that speaking disingenuously to others was built into the fabric of life for, apparently, some very good reasons (Habermas's ideal of distortion-free communication theory notwithstanding) (Habermas 1984, 1987). Words can be weapons that hurt others and by the end of this experiment with straight talk, Jacobs reported he had just lived through what was probably the worst month of his life. One might note in this context that William James was legendary for his forthrightness

and honesty in dealing with others. He was also known as having impeccable interpersonal manners in social situations. Jacobs's month of Radical Honesty may have unfolded differently had he also consulted/tested James's (strategic) accommodations to bourgeois life and tested those practices as well. Pragmatists of every stripe will see immediately that what Jacobs reports here is an example of the Pragmatists' (especially Peirce's) experimental or "laboratory" approach of putting real-life ideas and plans to the empirical test. This practice involves the engaged testing and sorting out of the consequences of one's thoughts and actions, and, through this process, coming to learn the true value or worth (and cost) of adhering to certain of society's customs or ideals.

In other experiments, to test the theory that IQ was hardwired, Jacobs read the entire *Encyclopaedia Britannica* from A–Z (the consequence of which was an unleashing in him of an unbridled curiosity for learning new things about the world he had not previously been aware of) and later lived for a year adhering to the rules of the Bible, the Ten Commandments, and beyond (he said it "... changed me in ways large and small. Perhaps most notably, it's given me a sense of gratitude [to others and for life].") In another experiment, Jacobs agreed to pose nude for an article written by a female actor who was exploring the objectification of women in the media industry. After sitting around a room for extended periods of time without clothing before a crowd of fully clothed photographers and young tech assistants, Jacobs says he was forever incapable of looking at popular media photographs of naked people without recalling the loss of control over self and the objectification required in the production of such images. The much-discussed capacity for, identification with, and empathy for, the suffering of the Other, as well as the complicated phenomenological act of perceiving our own bodies, is transformed when one's own self is offered up, not as an opportunity for theoretical speculation, but as an experiment or test of the "live possibilities" it may present for understanding self, the Other, and interpersonal behavior (James 1907; Rorty 1991).

Although Jacobs does not cite the American Pragmatists as inspiration for his self-fashioned experiments, he does claim to be practicing a form of "participatory journalism," a close relative to the "participant observation" social science research program that hails from the hotbed of American Pragmatism throughout much of the twentieth century: The University of Chicago (Bulmer 1984). This type of journalism/research taps into a central Pragmatist vein that fuels the imagination of those cultural explorers who are not put off by the puritanical hall monitors of positivism and can thereby expand – at least potentially – the storehouse of possible knowledge and action available to the human species by leveraging the unique experiences of every distinct individual. W.E.B. Du Bois (1868–1963), discussed below, was probably the first fruit of the early Pragmatist movement and his *The Soul of Black Folk* (1903) remains a classic of American social science channeled through the popular medium of journalism (a number of the essays in his 1903 classic were originally published in *Atlantic Monthly*).

In the next section, an orientation/practice referred to as Pragmatist Intellectual Craftpersonship is offered as the conceptual/practical space that arguably represents a powerful opportunity for expanding the possibilities for widespread knowledge generation and critical, democratic participatory action, the desiderata of many who consider themselves working in the Peirce, James, and Dewey Pragmatist tradition(s).

The Possibilities of a Pragmatist Intellectual Craftpersonship

One interesting connection between the cultural situation of the early Pragmatists and some features of the postmodern moment is the unabashedly personal nature of the content and expression of much of the knowledge in both eras (James's essays do not hide the fact that they are written by a full-blooded human being, no different in most ways than his own readers). With the expansion of technology, access to cultural content production by individuals has greatly expanded since the

early twentieth century (the expansion having been exponential since the beginning of the current century). People with Internet access and relatively modest computing and recording resources can not only consume huge quantities of cultural content, they can also contribute to it in an almost unlimited manner. And they often do so in the guise of what might be seen as the Jamesian pose of an individual simply sharing with others his or her unique perceptions and individualized experiences. The current cultural moment is indeed an opportunity for generating an unlimited number of the William James type of creative, romantic individual who could offer up their own personal and cultural prescriptions for examination/sorting out by the broader public. It is hard to imagine a more propitious opportunity for the generation of possible solutions to personal and societal problems that a vast interconnected network of individuals motivated to contribute – at least potentially – to the common good.

It should also be said in this context that it is not hard to imagine (as it is in the reported news daily) the potential for far darker possibilities given the capacity of the Internet to unite disparate individuals and groups into cabalistic and violent, sectarian movements. Many of the programs of these dystopian sects are far different in intent and design than the open, democratic, and tolerant forms of Pragmatist-styled problem-solving agendas highlighted here. Where one comes down on the potentiality issue relating to the liberatory or repressive possibilities/consequences of the explosion in information technology (and its control) is likely to be related to one's own general beliefs or (Manichean) world-views regarding the possibilities for democratic control of collective life in its current and/or future forms. At least as far as Peirce was concerned, while the future cannot be predicted with any certainty, he felt that it was the community of scientists, not the narrow-minded dogmatists, who were most likely to get things right and keep humanity on course for the unification of the species (Peirce 1893b). James similarly had an optimistic view of the future of humanity (even if he was periodically beset by incapacitating depression personally).

Given that our current cultural moment is awash with information of staggering proportion and hard-to-assess possibilities, it might be argued that individuals would benefit from a form of craftspersonship that guides them as they struggle to balance the desire for creating unique and useful knowledge (i.e., proposing innovative behavioral solutions to personal and societal problems) with the need to leverage the wisdom and the discipline of the past and current masters and critics who have worked the same territory they are surveying. It is the thinkers who have left their hard-earned laboratory notebooks filled with reports of paths taken and not taken that may best benefit those who wish to make original – but also efficacious – contributions. The courage to invent and share characteristic of much personal (or Internet DIY) content can only meet the Pragmatist test of success if the producers know how to listen to the voices of others, both supporters and critics, both predecessors and contemporaries, as it is in these voices that we can find methods of thought and action that others have found to be useful. Learning to consult/listen to these other voices without losing confidence in one's own unique perspective is the craft part of this practice. In short, what is needed is a viable model of craftspersonship for the new era. The twentieth-century Pragmatists (from Peirce and James through Du Bois and Dewey to Rorty and the Feminist-Pragmatists) have proposed various models for this and offer themselves as exemplars. The full menu of their unique forms of cultural analysis has not yet been fully vetted for possible forms of craftspersonship by our contemporaries (see Richard Sennett's *The Craftsman* [2008] for a development of this model and also Crawford 2009).

The need for such a rigorous and critical vetting of philosophic and cultural content was appreciated by the early American Pragmatists, who extended this form of inquiry to their own ideas. Peirce, James, Dewey, Josiah Royce (1855–1916), and the other early proponents of the Pragmatist message of testing out ideas and plans were themselves not satisfied to generate narcissistically self-referential knowledge content (notwithstanding their critics, who claimed

otherwise, e.g., Bertrand Russell 1945), even as they were committed to expressing themselves in an open, creative, and accessible way. Each of the Pragmatists mentioned here not only attempted to write in a clear manner accessible to the educated public of their day (granted, a demographically small sector of the American population), they also lectured widely to public audiences. As Peirce suggested above, their ideas about the utility of the Pragmatist craft were not part of a self-referential game played just by office-tethered scholars.

Peirce's immanently readable (even today) 1877 and 1878 statements introducing Pragmatism were published in *Popular Science Monthly* (perhaps a misleading image as that publication at the time was the hardly "popular" in any meaningful sense and was more philosophical than scientific) (Peirce 1877, 1878). The craft-like nature of his and the other Pragmatists' work seemed to exemplify the principle that while it was important for individuals to discover and create unique and even idiosyncratic ideas and plans, it was just as important to communicate these ideas in as accessible way as possible so they could be fully tested by others. One of the founding documents of Pragmatism referenced above was entitled by Peirce *How to Make Our Ideas Clear* (Peirce 1878). It is a model both of expression and of inspiration for those exploring future personal and societal possibilities. Peirce directed his comments in that essay to those people interested in the working with "... those vital and procreative ideas which multiply into a thousand forms and diffuse themselves everywhere, advancing civilization and making the dignity of man..." (Peirce 1878). Herein one can see the Pragmatist desire for direct communication with one's fellow citizens and a commitment to knowledge generation that suggests future possibilities for present and future human understanding.

Many of James's works (not all, certainly) are almost completely accessible even today to people whose education ended at high school. And he speaks in a self-deprecating tone that invites readers to disagree with, and even laugh at him, a Harvard professor of philosophy grown too big for his britches "... had they had a peep at my

strange indoor academic ways of life at Cambridge" (James 1892/1958). Dewey's desire to and capacity for communicating with children, teachers, and the broader public regarding his ideas about human possibilities was well known in his day but is worthy of another look by a current generation of social thinkers (that is if one does not take on faith Richard Rorty's recommendation of Dewey as our unparalleled "cultural hero." A two-volume collection of Dewey's work: *The Essential Dewey* published by Indiana University Press in 1998 is widely available and eye-opening to those who dismiss the Pragmatist message as superficial, Pollyannaish, and outdated) (Dewey 1998a, b).

Beyond a Promethean encouragement for the discovery/generation, and empirical testing of new ideas and practices related to human potential/possibilities and a desire to communicate with others in an open, inviting democratic way (or at the very least, a capacity for expression that escapes the gravitational pull of a narcissistic self-absorption), what other elements of thought and practice were modeled by the Pragmatist Craftpersons under discussion?

I would argue that the centerpiece of the Pragmatist craft is an imaginative, existential sensibility or desire to, and capacity for, understanding self and others in an open and genuine way. The three discussed here certainly strove to achieve a deep understanding of themselves and others in a more than an abstract, distance-enhancing, academic way. Here I will only briefly discuss Peirce as an exemplar but even a cursory survey of the works of James, Dewey, Royce, George Herbert Mead (1863–1931), W.E.B. Du Bois (1868–1963), Jane Addams (1860–1935), and others underscores the importance these early Pragmatists attributed to the need for and capacity to understand the voices of self and others as a prerequisite for Pragmatist Craftpersonship.

As is well documented, James was a "Pluralist" long before the American academy belatedly discovered the need to hear voices other than those of the actuarially miniscule Western, affluent, White male minority (Perry 1935; Barzun 1983). His craft studies of religious beliefs and practices are Pragmatist exemplars of the willingness and

courage to take seriously the voices of others, including those whose beliefs and practices are decidedly frowned upon by the sophisticated elites. The need to seek out and attempt to understand others is arguably still the greatest challenge to democratic possibilities and this challenge is demonstrated almost daily. For example, had there been more social scientists willing to venture out into the provinces in the run-up to the 2016 American presidential election, there may have been far fewer people surprised at the outcome when an authoritarian candidate disapproved of by the educated coastal elites won the election. And had more Americans been interested in and made aware of the conditions of life in the central cities (or of African American life historically through the pioneering works of Du Bois and others), the brutal killing of George Floyd in 2020 in the Upper Midwest of the USA may not have been perceived as so incomprehensible within nonminority North America. It is important to note in this context that although there is not space here to discuss more comprehensively the ethnocentrism/racism of the early Pragmatists, it is the subject of recent scholarship, starting with Cornell West's *The American Evasion of Philosophy: A Genealogy of Pragmatism* (West 1989). West discusses how the early Pragmatists and their followers to this day did not and do not appreciate "... the strategic role black people have played in the development of the capitalist economy, political system, and cultural apparatuses in America" (West 1989). Obviously much more needs to be done to understand the failure of Pragmatists across the history of the movement to understand the impediments to the seemingly endless "possibilities" they foresee in the American ideal faced by the communities of color, women, LGBTQs, and other groups/communities facing structural and endemic inequality, discrimination, and exclusion (Kautzer and Mendieta 2009).

Even with his ethnocentric perceptual blinkers, Peirce, the detailed-driven laboratory scientist whose day job consisted of measuring minute effects of gravitational fields on the earth's rotation, was also a creative polymath nearly obsessed with understanding and promoting human communication (pace his work on logic and his

"invention" of semiotics) and whose final philosophical formulation (left unfinished) was chasing something called "cherishing love" or "agape" (Peirce 1893a). To Peirce, the greatest sin of a human being was individual economic selfishness and an unwillingness to accept others as equal parts of the larger human community (his blindness to his and others' racism in this regard is also part of his legacy). It is not an exaggeration to say that Peirce's entire philosophical system was the lifelong promotion of the idea that the entire human species is a collection of individuals trying to make actual what is now only theoretically possible: the unification of the human community. His theory of signs was an attempt to show that genuine communication between people was not only possible but (eventually) guaranteed by the fact that each human being (when he or she got properly oriented) was really just a single investigator in the larger community of investigators introduced by evolution to help advance the human species. But even here, his idealist formulations were offered up for a Pragmatist-inspired vetting by others. To Peirce, *Evolutionary Love* was a cosmological hypothesis he thought had been well demonstrated over the course of history but he said he would be, "... fully content to await the final decision" (Peirce 1893b). In terms of the need of the Pragmatist Craftsperson to become self-aware, Peirce himself recognized that he may have lost some of his scientific precision when he blames the above metaphysical talk of his own on the fact that he was brought up among the Concord Transcendentalists, and although "... not conscious of having contracted any of that virus ['the monstrous mysticism of the East']... [n]evertheless it is probable that some cultured bacilli, some benignant form of the disease was implanted in my soul, unawares, and now, after long incubation, it comes to the surface..." (Peirce 1892/1893).

In addition to including the genuine desire for – if unevenly realized – understanding the humanity of others as part of the Pragmatist Craftsperson's toolkit, we might add the character trait of humility (Peirce understood this as related to his concept of "Fallibilism"). And perhaps supplement this trait with another early Pragmatist

characteristic: self-deprecating humor, a possible indicator of the capacity to see oneself as a democratic equal to all others (Rorty, in a different context refers to this trait as the capacity for “liberal irony”) (Rorty 1989). That the early Pragmatists themselves failed to fully understand or test the “consequences” of their ideas of democratic possibilities within the context of racial or gender differences is an interesting case study worthy of a James-inspired analysis of our near-inevitable “blindness” when it comes to understanding (certain) others (James 1892/1958).

Although the above discussion of Pragmatist craftwork is only a preview of the possibilities, it will be supplemented as the story moves forward across the twentieth century.

The Pragmatist Intellectual Craftsperson at Work: The Cases of W.E.B. Du Bois and C. Wright Mills

One measure of the importance of a philosophical/intellectual movement such as Pragmatism is provided by the criteria its originators set out themselves: How do the ideas, beliefs, and practices test out in the real world? More pointedly, what are the consequences or influences on others of the ideas as set forth by the founders of Pragmatism? What possibilities for knowledge generation, craftpersonship, and action did the movement generate? Some have argued that after the initial flowering of Pragmatism between roughly 1890 and 1945, the movement receded into the historical background of philosophy in North America, replaced by the logical positivism/empiricism of the Vienna School and then by analytical philosophy. This narrative reconstruction then creates the conceptual space for a later “Revival” of the original movement’s ideas. This arguably happened with the American Pragmatists (Dickstein 1998; Menard 2001). An alternative approach is seen in some recent archeological work on Pragmatism’s trajectory over the twentieth century. This “submerged historical continuity” narrative suggests a far deeper influence of Pragmatism on American intellectual life than previously understood (West 1989; Seigfried 1996; Kautzer and

Mendieta 2009). An understanding of the depth and range of the Pragmatist influence on twentieth-century thought is still in its infancy. This entry will present just two for consideration (and admittedly excludes Pragmatism’s greatest flowering in the work of those hailing from the Chicago school of sociology, starting with George Herbert Mead and continuing to the present generation of ethnographers inspired by the Pragmatists). However, although limited in depth and range, the discussion of the two here is indicative of how important strands of twentieth-century social thought can be tied back in direct and surprising ways to the expansion of possibilities for democratic thought and action laid out in the original Pragmatist intellectual imagination.

W.E.B. Du Bois’s life and work across the twentieth century is a powerful exemplar of Pragmatist Craftpersonship and its possibilities in the hands of a brilliant practitioner. Du Bois was a fifth generation American of African descent (West 1989). After attending Fisk University, an historically black college, he transferred to Harvard to study philosophy under William James and others. Du Bois reports, “I became a devoted follower of James at the time he was developing his Pragmatist philosophy. . . . James guided me out of the sterilities of scholastic philosophy to realist pragmatism. . . .” (Du Bois 1968). Du Bois went on to become the first American researcher to conduct “formal” empirical research of African Americans, publishing over 16 studies and a groundbreaking community case study of the Black community in Philadelphia, all before 1914. For Du Bois, it was not enough to theorize about race relations, one had to live in the actual community studied in order to understand from the inside the lives of the people he consulted/studied. Du Bois fashioned his own craft as he went along, changing his approach and his style of research as his thought and practice evolved. He published five novels and wrote on Black musical forms, arguing that the only way one can appreciate the agency of people (read: live possibilities) is to watch closely how they survive, even in, especially in, their oppressed state (West 1989).

Du Bois’s multivocal craft deepened over the course of his life, and he was adept at picking up

and dropping ideas and practices as their real-life consequences became clear to him. Imbued with what Irving Horowitz referred to in another context as a “Jamesian heroic definition of self” (Horowitz 1983), Du Bois concluded that small bore social scientific research was not a strong enough solvent for the racism faced by the Black community in the USA and as a consequence of his tests of a number of proposals for reform, his responses changed. He thereafter devoted his life to political protest and he became an agitator for change. He was one of the founding members of the National Association for the Advancement of Colored People (NAACP) in 1909 and spent the rest of his life testing out and revising his ideas as the conditions warranted. His later work involved an examination of Black nationalist proposals and in 1947 he drafted an NAACP document that asked the United Nations to pressure the USA to acknowledge the rights of 14 million oppressed African American citizens. For this and other efforts, he was arrested in 1951 and charged with being an unregistered agent for a foreign power.

It is hard to imagine a better testament to the possibilities of Pragmatist Intellectual Craftpersonship than W.E.B. Du Bois. While Du Bois would no doubt have made extraordinary contributions to American democracy had he not studied with the Pragmatists at Harvard, it is hard to imagine that the trajectory of his craft would have been as open to experiment and revision over time as his clearly was. He was open to any proposal that was capable of surviving the harsh test of the political world in which he operated. And he exhibited the same confidence in self that James, Peirce, and Dewey all possessed. That the power apparatus in the USA rejected his proposals did not dampen his spirit or his willingness to imagine other possibilities for himself and other: “It was a bitter experience. . . but I did not break . . . I found new friends and lived in a wider world than ever before – a world with no color line” (West 1989).

C. Wright Mills (1916–1962) offers another model for Pragmatist Intellectual Craftpersonship. Mills was both a sociologist and a theorist of Pragmatist craft work. Studying as an undergraduate under some former students of

George Herbert Mead at the University of Texas, Mills deeply internalized the early Pragmatists’ substantive and methodological worldviews. His biographer, Irving Louis Horowitz, argued that Mills’s entire career as an intellectual and activist cannot be understood without grasping Mills’s commitment to the possibilities for democratic citizenship he learned from his study of the original Pragmatists (Horowitz 1983). Mills’s dissertation at the University of Wisconsin was an in-depth study of the thought of Peirce, James, and Dewey (Mills 1969). In addition to a contribution to the literature on the “sociology of knowledge,” Mills took from the work of the three founders of Pragmatism the conclusion that the future possibilities open to those interested in building a democratic society depended upon the capacity of that society to generate forms of belief and knowledge that could guide the dominant institutions and mold individual behavior in ways consistent with participatory democracy.

In the entry on Mills in the *International Encyclopedia of the Social Sciences*, Immanuel Wallerstein said of Mills’s Pragmatist commitments: “Mills was a utopian reformer. He thought that knowledge properly used could bring about the good society, and that if the good society was not here yet, it was primarily the fault of men of knowledge” (Wallerstein 1968). Fundamental to the realization of these democratic possibilities was the creation of citizens capable of understanding and analyzing their individual and collective experiences. Mills learned from James the importance of what Horowitz calls Mills’s “first-person-singular theorizing” (Horowitz 1983, 128). For Mills, genuine learning is and has to be firsthand experience as without this engagement all one ends up with is the kind of abstract formalism that Peirce and the other Pragmatists decried (Mills singled out for particular criticism the work of the day’s leading theorist, Talcott Parsons, for his “Grand Theory” aspirations). Mills’s critiques of mid-twentieth-century American sociology were personal, incisive, and far-reaching (Mills 1959). For Mills, the importance of grasping experience with one’s bare hands, and one’s brain – via the “sociological imagination” – was something that every citizen could and should

learn if he or she wanted to contribute to the building of an American-style democracy.

Echoing the Pragmatist Craftsperson's theme regarding the importance of focusing on future possibilities, Mills was convinced that then-current social science scholarship was failing in its mission to help citizens get properly oriented to modern life and its possibilities: "We do not know the limits of man's capacities for supreme effort or willing degradation, for agony or glee, for pleasurable brutality or the sweetness of reason. But in our time we have come to know that the limits of 'human nature' are frighteningly broad" (Mills 1959). Some of Mills's ideas from his 1959 book outlining the frame of mind needed for social analysis ("the sociological imagination") are excerpted or anthologized in many readers, but it could be argued that the core of his Pragmatist-inspired teachings as to craftpersonship have little penetrated even the sociological establishment, let alone the larger cultural environment. A few of Mills's ideas as to craftpersonship will be cursorily mentioned here as it might be argued that these suggestions point to creating precisely the type of craft sensibility needed in a world that seems to encourage hyperindividuality and expression without the vetting/sorting/disciplining effect that the Pragmatists argued was essential for the generation of potentially efficacious ideas, beliefs, and behaviors. Pragmatists of all flavors believe that building democratic forms of life require the encouragement of creativity, innovation, and change – collectively, "imagining the possible" – but they also believe that a capacity for hearing and being receptive to the suggestions and objections of others is essential in any viable form of genuine democracy. Mills shared James's pluralism and need for hearing other voices. Toward the end of his life, his work shifted in the direction of the cultural space that W.E.B. Du Bois occupied as activist and journalist when Mills traveled to Cuba after the Cuban Revolution. In *Listen, Yankee! The Revolution in Cuba*, Mills gave voice to some of the revolutionaries he personally interviewed, including Castro and Che Guevara (Mills 1960). Like Du Bois, Mills' work attracted the interest of the internal security apparatus of the USA and Mills was told of a plan in which he was

to be assassinated by American agents. Like Du Bois, Mill was undeterred (although he did sleep with a gun by his side thereafter. Not likely something most contemporary social scientists consider part of their job description) (Mills 2000).

The model of the Pragmatist Craftsperson laid out by Mills is only one suggested exemplar of this cultural type. But it is a powerful one. An argument could be made that Mills's Appendix to his 1959 *The Sociological Imagination* entitled "On Intellectual Craftmanship" is one of the most important documents in the history of contemporary Pragmatism. In it, Mills attempts what few other scholars have the courage (or perhaps capacity) to do: He pulls back the screen to show exactly what one practicing craftsperson does when he attempts to understand both his own experience and the experience of his fellow citizens (James does something similar in his *Talks to Teachers* in 1899). Originally written in draft form in 1952, Mills mimeographed his "On Intellectual Craftmanship" for his graduate students at Columbia in 1955. It was further revised for publication for his 1959 work (Mills 1959; Summers 2008).

In the original draft, Mills discusses why he decided to write the piece (Summers 2008). Mills reports that it is not a secret that most professors complain that students do not know how to do independent intellectual work. When Mills would suggest to his colleagues that the students might be taught to do so, he said he heard in response: "But... you can't just teach people how to think..." Mills observes: "There is the complaint and there are the dogmatic answers to the complaint, all of which amount to saying: 'But we cannot help them much.' This essay is an attempt to help them" (Mills 2008). In a response that echoes the Pragmatist, open spirit of critical inquiry of James and Peirce, when Mills is told by other professors, "'Well, that is the way you work, but it's not of much use for me,' Mills responds: 'Wonderful. Tell me how you work'" (Mills in Sommers 2008). Mills's chapter on Intellectual Craftmanship provides the methodological foundation for a thoroughly Pragmatist craft sensibility, offered in the same open and "sharing" spirit characteristic of the original Pragmatists.

Mills claims that it is the sociological imagination of the craftsperson that is "... the quality whose wider and more adroit use offers the promise that... human reason itself – will come to play a greater role in human affairs" (Mills 1959). Such is the utopian possibility offered by Mills's version of the Pragmatist Intellectual Craftsperson.

Richard Rorty (1931–2007), late University Professor of Humanities at the University of Virginia, was born in New York in 1931. After receiving his Ph.D. from Yale, he taught analytic philosophy at Princeton for 15 years before his interests shifted to a Pragmatist philosophical perspective. Rorty's interest in the Pragmatist tradition led him to the work of John Dewey whose experimental and democratic approach to philosophy and social issues of the day impressed Rorty. Rorty develops an historical narrative in which the twentieth century's long philosophical journey from the dispatching of idealism through logical positivism, analytical philosophy and its critics in linguistic philosophy and then postmodernism, ended up where it started, with the Pragmatists, in particular, with John Dewey.

Following Dewey, Rorty argues that contemporary intellectual work in a world many have defined as postmodern requires the experimental approach first seen in Dewey and the other Pragmatists who went beyond their generation's own version of what in later days would become the "foundationalism" of analytical philosophy. According to Rorty, Anglo-American analytical philosophy functioned as the philosophical PR (public relations) firm for most scientific work in mid-twentieth-century philosophical thought. Following the early Pragmatists, Rorty argues that building a just society open to not only current but future possibilities requires very little of the preliminary, abstract conceptual work characteristic of much of the Western philosophical tradition (Rorty 1989). Rorty argues that Plato's *Republic* set a bad example by promoting the notion that philosophers – or other exceptionally smart and/or well-trained types (like social scientists) – should sort out all the conceptual difficulties before going to work establishing a just society (Rorty 1982).

The type of post-philosophical craftsperson Rorty envisions is more poet than scientist, an "all-purpose intellectual" or at times, a "liberal ironist" who is comfortable reading across all the disciplines and forms of knowledge. More Dewey than Peirce (or even James), Rorty argues that a democratic culture needs to be "de-divinized" by thinkers and citizens comfortable with "grounds" no more certain than Socratic-like conditions of the free exchange of ideas, beliefs, and plans. Rorty argues that the possibilities for a truly democratic culture asks no more of its citizens than that they attempt to justify their proposals in open and democratic debate with others. For Rorty, one's very conception of what is possible in a truly democratic world depends on what one allows oneself to "hope" for and this is expanded greatly by the capacity to understand or "read" widely within and across the different individuals and cultures that make up our diverse social worlds (Rorty 1989, 2000).

Rorty concludes with the argument that we need to think a little harder about what it takes to build a democratic culture. He argues that it requires less talk about how one's claims are grounded in something larger than one's self, group, or local culture and more social experimentation without the expectation that this could ever result in universal agreement or Truth. For Rorty, it is enough that citizens attempt to win others over to their point of view through debate and compromise. To want more than this messy process of building "solidarity" is to want something that is less like a democracy and more like manipulative power politics.

Even if nothing else survives from the age of the democratic revolutions, perhaps our descendants will remember that social institutions can be viewed as experiments in cooperation rather than as attempts to embody a universal and ahistorical order. (Rorty 1991)

The Post-Rorty World

Critics of what some critics refer to as Rorty's "Neo-Pragmatism" come from many directions. Some, like Bernard Williams, come from within

mainstream philosophy (Williams 1990). Williams argues that in Rorty's desire to be a poet as a way to escape from the gravitational pull of "foundationalism," he floats off into a world of fanciful (im)possibilities and sacrifices what Williams claims were the quite legitimate "scientific" goals of Peirce, James, and Dewey. Williams and others closer to the "realism" of Peirce, including Roy Bhaskar (1990), the Peircean Susan Haack (2006), and the so-called "New Pragmatists" (Misak 2007), argue that Rorty throws the democratic baby out with what Rorty sees as dirty bathwater of science. They claim that Rorty misunderstands that science is the only cleanser available to human beings that recycles and renews itself as part of its mission to "get things right," not just generate poetical, theoretic possibilities without the disciplining effect that an exploratory science can – and did – bring to the original Pragmatists. Even the intellectually promiscuous William James thought that one could go too far in generating "possible worlds" and held some of Freud's claims about the interpretation of psychological symbolism to be "a most dangerous method," perhaps too far out for serious consideration (James 1935). In this vein, Charles Taylor argues that Rorty's Deweyan desire to simply "change the western philosophical conversation" that has been going on for several thousand years concerning what is real is a form of ignoring or losing sight of important lessons. Rewriting Santayana, Taylor says "...those who ignore philosophy are condemned to relive it" (Taylor 1990).

Rorty as Pragmatist Intellectual Craftsperson thus stands as one of the most impressive and important of exemplars of the depth and variety within the Pragmatist craft but certainly not the last word in terms of the how one might conceive the possible but also the limits to the possible. Recent work in "Experimental Philosophy" might be seen as the more legitimate heir to the Pragmatist tradition than Rorty's work in which the assertion that "The Poets win" in their contest with the Scientists is premature, if not anti-Pragmatist (Knobe and Nichols 2008).

Another post-Rorty extension is seen in the work of Charlene Haddock Seigfried in her 1996 *Pragmatism and Feminism: Reweaving the Social*

Fabric. Seigfried explores the neglected history of the works of women (starting with Jane Addams, whose work greatly influenced Dewey's ideas), and who were, by almost any measure, original contributors to, as well as influenced by, the early (and continuing) Pragmatist tradition. Seigfried's inscription to her 1996 book sets the substantive framework for her studies and it comes from a comment John Dewey made in 1919:

When women who are not mere students of other persons' philosophy set out to write it, we cannot conceive that it will be the same in viewpoint or tenor as that composed from the standpoint of the different masculine experience of things. (Dewey in Seigfried Seigfried 1996).

In her magisterial analysis, Seigfried concludes her study with a sophisticated coda of Feminist-Pragmatist Craftspersonship that joins the spirit of the open universe of possibilities with a critical collaboration called for by the early Pragmatists discussed here:

Feminist pragmatists try to figure out what mechanisms – social, institutional, educational, political, an cultural – open possibilities of consensual decision making and revisioning in light of desired, eventual, concrete outcomes and which ones preclude or diminish it. It is this instance of 'prioritizing actual over hypothetical dialogue' [quoting Alison M. Jagger] that distinguishes pragmatist feminism from most 'Anglo-American ethics.' Consensus does not mean avoiding conflict or denying differences. ... (Seigfried Seigfried 1996).

Summary

In his 2019 book, *This View of Life: Completing the Darwinian Revolution*, evolutionary biologist David Sloan Wilson argues that it has only been in the past several decades that the full import of Darwin's ideas for understanding human thinking, behavior, and culture has been recognized. Wilson argues that an evolutionary worldview provides the best practical toolkit for thinking about the human species and its future possibilities. He notes that in the period following the publication of Darwin's work in 1859, few people understood the signal importance of his ideas for the understanding of human behavior and culture as clearly as did the early Pragmatists. They were

the first to grasp that the ideas, beliefs, and plans of human beings were part of the “natural” equipment of the human animal and that these beliefs and their consequences in the human-constructed societal forms were complements to the eyes and limbs and large brains we all possess.

In this revolutionary conception of life, each individual human being is an experiment of nature and that as such, each person can potentially contribute to the increasing adaptive capacity of the species by leveraging his or her unique perspective of the world (or worlds, if we follow James’s lead). The Pragmatists saw in concrete existence and particularized experiences of individuals, possibilities for new ideas and innovative angles, for new behavioral strategies and plans for living life or for organizing ourselves collectively. Another way of saying this is that each individual is properly seen as a possible incubator for the creation of a possible but currently unimagined world or worlds. Helping individuals become those incubators is exactly what W.E.B. Du Bois, C. Wright Mills and the other craft-oriented Pragmatists have been attempting for the better part of a century and a half.

Cross-References

► Possible in Sociology

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Analogy

Alessandro Antonietti

Department of Psychology, Catholic University of the Sacred Heart, Milan, Italy

Abstract

Analogy is based on a relation between a familiar domain (called “source”) and a new domain (the “target”). Such a relation enables people to transfer some pieces of knowledge concerning the source to the target so to lead them to manage the latter in an easier way because they can take advantage of what they know about the former. When a source-target relation is set, possible features of the unfamiliar domain are identified, and this allows individuals to deal with it in a productive manner. In the opposite direction, the understanding of the familiar domain changes because the analogy induces to discover unsuspected aspects of the source. The analysis of the cognitive processes underlying analogy showed that realizing the possible correspondences between the source and the target is the crucial step, which shares some features of the insight because the

awareness of the source-target connections occurs suddenly but not through the progressive identification of the correspondences. Individual differences in reasoning by analogy support this notion since logical-analytical skills do not correlate with the ability to reason by analogy, which instead is correlated to an intuitive-holistic style of thinking. Finally, the possibility to train reasoning by analogy is taken into account and tips for education are reported.

Keywords

Awareness Encoding · Insight · Mapping · Reasoning · Retrieval · Schema Induction · Similarity · Style · Synectics · Transfer

Introduction

Analogy is a thinking and communication tool through which a relation between a familiar domain (called “source”) and a new domain (the “target”) is set. Thanks to such a relation, some pieces of knowledge concerning the source are transferred to the target so to allow people to manage the latter in an easier way because they can take advantage of what they know about the former (Gentner and Smith 2012).

Analogy is concerned with the issue of the “possible” in two ways. First, if a relation between the source and the target is established, possible features or meanings of the unfamiliar domain are identified and this enables individuals to deal with it since they have some ideas about how it may be conceived. Second, once the relation between the source and the target has been detected, the understanding of the familiar domain changes because the analogy leads to look at the source from a different perspective and to discover unsuspected aspects, and so new possibilities are recognized (Gentner et al. 2001). To summarize, analogy makes familiar what is strange (the target) and makes strange what is familiar (the source) (Gordon 1961).

To give an example: During a lesson a child gets hurt. The teacher takes him to the school infirmary, a place where that child has never

been. When the child goes home, he tells his mother that in the morning he had been accompanied into the “ambulance-room.” Up to that day the infirmary was an unknown concept for that child. The strategy he used to face such an unfamiliar situation was to find an analogy with something which was familiar to him. Since he knew very well what an ambulance is (he had a toy ambulance), he found that it looked like the new room where he had been taken for the first time in his life: In the infirmary he saw objects that there were also in an ambulance and he realized that the function of the infirmary (the target) is similar to that of the ambulance (the source). On the opposite direction, thanks to the analogy he established that child improved his conception of the ambulance as well: by making the experience in first person of what a stretcher is (since in the infirmary he was made to lie on the stretcher) and why it has wheels and moveable side rails, the child comprehended the functions of these features of the stretcher which is inside the ambulance toy.

It has been noticed that in many disciplines the development of a novel theory or perspective depends on applying an analogy drawn from a different domain of knowledge (Gentner and Grudin 1985; Hesse 1966). This is a process of which artistic intuition, historical reconstruction, scientific discovery, and technological **invention** (see **“Innovation”**) – fortuitously or intentionally – take advantage (Boswell 1981). Analogies occur in everyday thinking (Lakoff and Johnson 1980) and are present early in development (Goswami 1992). Political and social discourses and judgments (Gilovich 1981; Spellman and Holyoak 1992; Seixas 1994), as well as advertising messages (Holyoak and Thagard 1996), are often based on analogies. Legal (Marchant et al. 1991; Sunstein 1993) and medical (Eva et al. 1998) decisionmaking is sometimes grounded on reasoning by analogy. Moreover, in ordinary language people make use of analogies when they try to explain something (for instance, how a machine works or how an object must be employed) (Boerger and Henley 1999), to express their own thoughts (Honeck and Hoffmann 1979; Ortony 1979), to communicate their emotions and feelings and even highly structured forms of thinking,

such as mathematical reasoning (English 1997; Vamvakoussi 2019), have analogical grounds. Thinking by analogy appears early in the child's development (Glady et al. 2017; Whitaker et al. 2018) and school instruction may rely on analogies because they allow to clarify concepts which are difficult to understand (Duit et al. 2001; Kolodner 1997; Thagard 1992) and are a potential mechanism for the development of ► **creativity** (Bruner 1964). In all these situations, mapping a situation onto another one permits one to identify a wider or deeper meaning in the former and to find an unsuspected meaning in the latter. In both cases, the result is that our understanding has changed because a possible perspective toward the old and the novel experience is assumed.

Because of the broad field of application of analogy, the basic cognitive processes which support it are worth investigating, by highlighting the main mechanisms which are involved. In addition, considering how the skills in reasoning by analogy can be enhanced is important as well.

Why Is It Difficult to Identify Analogies?

There is evidence that people fail to transfer spontaneously what they know about the source to the target if they are not instructed about the source-target relationships. In fact in several experiments participants, who were presented the source without having been informed about its relevance to the target (no-hint condition), transferred the principles embedded in the source to the target in a very low percentage, not significantly different from that recorded in control conditions where no source was given. Conversely, high percentages of transfer emerged when participants were told that the source might be relevant to the target (hint condition). Such a difference between the no-hint and the hint conditions occurred with various kinds of situations (Bassok 1990; Gick 1990; Gick and McGarry 1992; Needham and Begg 1991; Novick and Holyoak 1991) and was found in adults as well as in children (Chen and Daehler 1989).

In order to distinguish the mere activation of the source information relevant to the target from

relating such information to the target, a series of experiments were carried out (Anolli et al. 2001). In these experiments two basic conditions were designed: reminding and hint. In the *reminding* condition the representation of the source was activated immediately before the presentation of the target by inducing participants to retrieve the critical part of the source relevant to the solution of the subsequent task, with no cue about the connection of such information to the target. By contrast, in the *hint* condition participants, before the presentation of the target, were told that the critical part of the source presented earlier would be useful to address the target. Results suggested that the lack of spontaneous transfer does not depend on failures in the activation of the relevant source information. In fact, although people were invited to recall source information, they did not transpose it to the target in a significantly greater proportion than did those in the control group. Rather, only when subjects became aware of the relationship between the source and the target, they applied the principle embedded in the source to the target. Therefore, reasoning by analogy needs the awareness of the source-target connection and the mere activation of the source immediately before or during the target task has no effect in enhancing transfer unless it is accompanied by a hint which suggests to search for possible source-target similarities.

Phases of Reasoning by Analogy

There is a consensus that reasoning by analogy can be divided into the following phases (Pierce et al. 1996; Reeves and Weisberg 1994):

- The “encoding” of the source.
- The “retrieval” or “search” or “selection” or “access” phase, which induces individuals to recall a source relevant to target.
- The “mapping” or “use” or “applying” or “adapting” phase, in which subjects construct orderly correspondences between the elements of the source and those of the target to draw a conclusion.

The lack of spontaneous transfer in reasoning by analogy suggests that the crucial distinction is between the second and the third phases, namely, between the phase in which individuals access the source information and the phase in which they use such information to derive the conclusion about the target. It is possible that, even if the source information is accessed, subjects fail to transfer it to the target because they cannot map it appropriately to the target. Conversely, subjects may be able to apply source information to the target but cannot access such information during the task. In order for spontaneous transfer to occur, both processes must take place. However, even though accessing source information alone does not ensure a successful use of it, failure to retrieve previously experienced situations is considered the biggest impediment.

Retrieval is a controversial phase. After the encoding of the source, source information is to be present in the persons' mind when they face the target. Such an activation may be elicited automatically by stimuli embedded in the target setting or by an intentional search in memory. In any case, individuals must realize that the activated information can be related to the target task because such information may be useful. This may happen either as a consequence of events which produce such an awareness or as a consequence of an intentional selection of the activated source information in order to identify which elements are relevant to the target. When people have realized the source-target connection, they can map the source onto the target to transfer what is embedded in the source to the novel situation by means of matching operations. In conclusion, it seems that reasoning by analogy is not an automatic process, but it requires controlled attempts to relate the target to a source. In other words, the process in question implies top-down rather than bottom-up mechanisms. Transfer from the source to the target does not appear to be data-driven but needs the search for correspondences between them.

The third phase is problematic as well. It was maintained that in this phase the abstraction of a solution schema from the source and its mapping onto the target are involved (Novick and Holyoak

1991). More precisely, persons – while also retaining separate representations of specific information from the sources (Bernardo 1994) – derive a general schema. When faced with the target, they then apply the schema to the new situation. As far as the mapping phase is concerned, the process is usually conceived as follows:

- People grasp the correspondence between an element of the source and of the target.
- Then they find in the source a relationship between the previous element and a second element.
- Consequently, they map such a relationship onto the target.
- The result is that a second source-target correspondence is found.

This process continues in this way until the mapping is completed, namely, all the relevant correspondences are identified. In sum, mapping is conceptualized as an incremental mechanism which yields, through the addition of new similarities to those previously found, the gradual extension of the source-target similarities which at the end, through the complete source-target overlapping, leads one to apply what is known about the source to the target (Keane 1990).

Analogy Does Not Involve an Incremental Process

Holyoak and Koh (1987) argued that retrieval of analogies is based on the summation of activation resulting from multiple shared features. If the sum of activation exceeds some threshold, the representation is retrieved and it can be used for further processing, such as an explicit source-target mapping. According to these authors, retrieval by summation of activation can provide a general mechanism for flexible access to information in the memory that is related to a novel input. An activation model responsible for reasoning by analogy has been proposed also by Anderson (1993). In this perspective, transfer occurs when the strength of the activation of the trace of the

source is sufficiently high. In this case, information embedded in the source becomes so strong that it can be applied to the target. The question is the following: Do people actually reason by analogy through an incremental process as predicted by these models?

Introspective reports and thinking aloud data (Wedman et al. 1999) failed to support the alleged incremental nature of reasoning by analogy. Van Lehn (1998), by analyzing protocols of students engaged in physics exercises whose solution was suggested by previous analogous examples, found that skilled solvers did not proceed in a sequential, progressive way. A study (Antonietti 2001) showed that source-target correspondences were suddenly identified and individuals seldom transfer knowledge to the target by means of a systematic process. It was also observed that thinking aloud, a procedure that usually improves performance since it “imposes” a well-structured way of reasoning leading individuals to proceed step-by-step, fails to enhance analogical transfer (Neuman and Schwarz 1998). Finally, experiments, where the mapping process was monitored by means of the similarity-rating task, induced to cast doubts about the incremental nature of the mapping process since reason by analogy appeared to be not a continuous, but a insight-like process involving mental acts which allow one to perceive, at a given moment, the whole source-target correspondences (Antonietti 2001).

This conclusion is consistent with the investigation of individual differences highlighting that people possessing creative and insight skills – as well as intuitive-holistic, adaptor, and field-independent cognitive styles – perform better in analogy tasks than persons with analytical thinking skills and styles (Antonietti and Gioietta 1995). It can be conjectured that these styles play a role in two different steps of the reasoning by analogy. According to several authors (Clement 1988; Gentner 1989; Gick and Holyoak 1980), in the first step people derive the structural representation of the source and in the second step adapt this schema to the novel situation. Presumably, field-independent individuals are skilled in reasoning by analogy because they are facilitated in the first

step, that is, in the abstraction of the schema from the source context in which it is embedded. Adaptors tend to have good performance in analogical transfer because they are facilitated in applying the principles derived from the source to the domain of the target.

The overall picture that emerges from the abovementioned studies suggests that cognitive processes underlying analogy are insight-like processes. Evidence supports the notion that prefrontal cortex – which is the core neurobiological mechanism involved in analogy-making (Bunge et al. 2005; Urbanski et al. 2016) – plays a role in the restructuring or insight phase, namely, when individuals overcome the mental impasse which prevents them to find the relevant answer and a new perspective emerges. Aziz-Zadeh, Kaplan, and Iacoboni (2009) found that the sudden discovery of an unexpected meaning in verbal problems is associated to the activation of a neural network including insula, anterior cingulate, and right prefrontal cortex. A decreased alpha power in the right prefrontal region, indicating an increased cortical activity, was reported by individuals who reached the solution of a problem by restructuring it (Sandkühler and Bhattacharya 2008). Thus, it appears that prefrontal cortex is actually involved also in insight-like instances of reasoning by analogy.

Reasoning by Analogy Can Be Trained

Can the ability to think by analogy be improved? Some techniques – such as synectics (Gordon 1961) – have been devised to train to produce creative analogies in order to solve professional problems and also some computer-based instructional systems have been designed to enhance analogy-based learning (Reimann and Schult 1996). In school settings, programs aimed at leading students to learn by identifying analogies between disciplines have been implemented as well (Alexander et al. 1998). More precisely, Vosniadou and Schommer (1988) reported that presenting students with analogies in order to facilitate the learning of new matters is effective when there is a hint that induces subjects to map a

familiar situation (that acts as source) onto the novel situation (target).

The possibility to enhance reason by analogy in childhood was investigated in a test-retest study which involved 4- to 6-year-old preschoolers who were presented a set of analogical thinking tasks (Antonietti 2000). This battery of tasks was administered twice, with a 6-month delay. During such period children were assigned to one of three conditions, each involving some training (There was also a fourth condition – control – with no training). The training consisted of two weekly sessions of about 90 min. In each session a previously instructed teacher presented pupils with a part of a structured program aimed at enhancing analogical thinking. The material consisted of a series of short stories underlying the same structure, even if characters, places, and situations were always changed. Starting from this material, children were invited to find, analyze, complete, vary, or create analogies. Stories concerned different domains (historical environments, scientific topics, linguistic issues, and social problems) and the exercises performed by children activated different expressive codes (motor, pictorial, and verbal). Such activities were conducted differently according to the experimental condition to which pupils were assigned:

- *Text condition:* Children had to process analogies found within a story or to match different stories to identify similarities.
- *Real-life condition:* Children were hinted at processing correspondences between stories and everyday-life situations and had to reflect about such correspondences. Analogies were focused above all on practical aspects.
- *Socio-emotional condition:* Children worked on similarities between affective and interpersonal issues, involved in the stories and their own experience, and elaborated them according to a variety of suggestions.

Analyses carried out on each age level revealed that the text and real-life training conditions were the most effective for 5- and 6-year-old participants, whereas the socio-emotional training was the most effective for 7-year-olds.

Conclusions

Research supports the notion that reasoning by analogy is a multidimensional process whose components have different developmental trends because of the involvement of different general mental function (for example, abstract ► [intelligence](#), linguistic competence, and divergent thinking). As a consequence, a range of different skills must be trained.

Furthermore, thinking by analogy can be improved in regular school environments across the curriculum by involving teachers of different disciplines. Finally, the dimension which benefits mostly by the training is ► [creativity](#). If we train children to pay attention to analogies, reflecting about them, and re-elaborating them, we foster fluidity and flexibility in thinking. Children become more able to identify common aspects in different realities and to transfer ideas from a domain to another. This helps to think divergently, to solve novel problems, and to find plots to tell story (see ► [“Divergent Thinking”](#)). In other words, a general cognitive flexibility leads to see familiar things with new eyes and to face new challenging situations by applying schemata drawn from past experience.

Cross-References

- [Creativity](#)
- [Divergent Thinking](#)
- [Innovation](#)
- [Insight](#)
- [Intelligence](#)
- [Invention](#)

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Anchoring

Ineke Sluiter¹ and Miguel John Versluys²

¹Department of Classics, Faculty of Humanities, Leiden University, Leiden, The Netherlands

²Classical and Mediterranean Archaeology, Faculty of Archaeology, Leiden University, Leiden, The Netherlands

Abstract

Anchoring is a concept describing the process or activity through which relevant social groups connect what presents itself to them as new to something they deem familiar (Sluiter, *Eur Rev* 25:20–38, 2017). It enables people to perceive or construct forms of continuity within change, and it helps them to accommodate and absorb new inventions, practices, objects, or ideas. As such, it is a necessary ingredient of successful innovation processes. As we will argue, anchoring should be regarded as a precondition for imagining the possible, in that it provides the imagination with a starting point: the familiar (which often is the familiar past).

Anchoring can be positive, where a direct connection is established with something already accepted, already playing a role in society; or it can be negative, when a foil is used to identify what something or someone *is not* or *does not want to be*. It can take the form of a link with the past and the traditional, on which more below, or it can connect a new phenomenon in one societal domain to a familiar analogue taken from another domain. For instance, when young people are asked to contribute a year of community work to society, recourse is had to the familiar analogue with the military domain, where we know “compulsory military service”: this yields the anchoring expression “civilian service,” which directs the audience toward the imagination of a new possibility. It is the process of anchoring that makes the new imaginable. Anchoring often takes place conceptually through language and discourse (Sluiter, *Old is the new new*:

the rhetoric of anchoring innovation. The language of argumentation, Springer, Cham, 2020). In the example of civilian service, the category of “service” is borrowed from the military and accommodated to the new domain by the addition of the qualifier “social.” In order to imagine the possible, we do not create *ex nihilo*, but we take as our starting point a familiar anchor. Any theory or analysis of the Possible should therefore take anchoring practices into account.

Keywords

Anchored imagination · *Adynaton* · Categories of change · Imaginary worlds · Development

Introduction

Anchoring is a concept describing the process or activity through which relevant social groups connect what presents itself to them as new to something they deem familiar (Sluiter 2017). It enables people to perceive or construct forms of continuity within change, and it helps them to accommodate and absorb new inventions, practices, objects, or ideas. As such, it is a necessary ingredient of successful innovation processes. As we will argue, anchoring should be regarded as a precondition for imagining the possible, in that it provides the imagination with a starting point: the familiar (which often is the familiar past).

Anchoring can be positive, where a direct connection is established with something already accepted, already playing a role in society; or it can be negative, when a foil is used to identify what something or someone *is not* or *does not want to be*. It can take the form of a link with the past and the traditional, on which more below, or it can connect a new phenomenon in one societal domain to a familiar analogue taken from another domain. For instance, when young people are asked to contribute a year of community work to society, recourse is had to the familiar analogue with the military domain, where we know “compulsory military service”: this yields the anchoring expression “civilian service,” which directs

the audience toward the imagination of a new possibility. It is the process of anchoring that makes the new imaginable. Anchoring often takes place conceptually through language and discourse (Sluiter 2020). In the example of civilian service, the category of “service” is borrowed from the military and accommodated to the new domain by the addition of the qualifier “social.” In order to imagine the possible, we do not create *ex nihilo*, but we take as our starting point a familiar anchor. Any theory or analysis of the Possible should therefore take anchoring practices into account.

Anchoring the Imagination of the New

Anything conceptually available, and thus familiar, can function as an anchor. This was understood also in Greco-Roman Antiquity (see under ► “Antiquity”). In describing various categories of change, meant as an exhaustive enumeration, Aristotle (384–322 BCE) implicitly assumes that all change is based on the transition from a status quo to a new situation: the actual and the potential, as he calls them. Change can affect the status quo in its existence, quantity (addition, subtraction: e.g., growing or shrinking), quality (e.g., being healthy or sick), or place (e.g., here, there) (see e.g., Aristotle, *Physics* 190b; *Metaphysics* 1069b; 1042a for health and sickness). In the later Greek intellectual tradition, this becomes entrenched as an influential fourfold division of categories of change: addition, subtraction, substitution, or permutation (where two items change order) (Desbordes 1983). Each time, change starts from a base that functions as the anchor: this anchor is the status quo affected by the different forms of change. The fourfold division defined options for stylistic variation and linguistic change (Usener 1913), but also for the imagination of possible changes in the natural world.

Various schools of ancient philosophy after Aristotle pondered the question of the imagination. The Epicureans started from sense perception and assumed that images such as that of a Centaur (a horse with the upper body of a man)

would somehow arise from the combination of very fine free-floating particles given off by a horse with those coming from a man (Long and Sedley 1987, Sect. 15D; Lucretius, *On the Nature of Things* 4:739–742). The Stoic philosophers also started from sense perception and the so-called “impressions” (*phantasiai*, not the same as our “phantasy”) made by the physical world on our sense organs (or arising in a non-sensory way, through thought). They are different from the *phantastikon* (“imagination”), which may produce “figments” (*phantasmata*), not actually caused by anything leaving an impression – in fact, they may occur in people who suffer from melancholia or are mad (Long and Sedley 1987, Sect. 39A–B). According to the Stoics, we are not at the mercy of impressions or figments, but are in a position to form judgments about them. The thought operations that we use are again related to the categories of change discussed above: we can conceive of giants like Tityos and Cyclopes by the operation of magnification, of Pygmies by diminution, of eyes in the chest by transposition (change of place), of a Hippocentaur (horse-man) by combination, of death by opposition (Long and Sedley 1987, Sect. 39D = Diogenes Laërtius 7: 53). Clearly the starting point (or anchor) for thinking of the one-eyed giant (the Cyclops), or the diminutive Pygmy is a human being. The anchor consisting in the familiar is the launch pad of imagination.

Anchored Imagination: Fictional and Fantasy Worlds

Such examples of “anchored imagination” can be illustrated from many other domains, ancient and modern. The genre of biographical fiction has been described in these terms by the Irish author Colm Tóibín. He uses the concept of anchored imagination in describing how the bare bones of the facts of someone’s life can be used as a basis to invest a story with emotions and feelings (Layne and Tóibín 2018). In further reflecting on the relation between facts and fiction, he then expands this thought to encompass

not just biographical fiction, but all fiction: “all fiction takes its bearing from things that have happened in one way or another,” he says, and “I am using facts as anchors” (Layne and Tóibín 2018, 161, 165).

The notion of “anchored imagination” is helpful in understanding other phenomena as well. It also applies to the imaginary and fantastical worlds that have been and are being construed in many if not all cultures and periods (Wolf 2018). They involve creatures and/or events whose existence and occurrence are “impossible” in our actual world. They are located in the “not here/not now,” and can be fitted out with imagined landscapes, histories, peoples, forms of government, languages, customs, and material cultures. However strange and astonishing such details may be, they are always anchored in the somehow familiar. This is achieved by various cognitive operations: the creation of analogues and reflections, oppositions, deviations, and transpositions into the transcendent and the supernatural. Imaginings of Underworlds and the abodes of the gods in various mythologies can similarly be regarded as constructions of imaginary worlds anchored in the reality of the culture producing them. And, interestingly, once a tradition of creating such worlds exist, new versions may be anchored in that very tradition itself of imagining imaginary worlds (Rogers and Stevens 2017).

Anchoring the Impossible: The *Adynaton*

In imaginary worlds, the *possible* is imagined and often transcended. If they still manage to offer the appearance of the real, this is because they use the familiar as the launch pad of imagination. However, many languages and folk traditions also like to imagine and play with the *impossible*, while expressly labelling it as such. Its use in ancient Greek and Latin literature has earned such figures of speech and thought the general label of *adynaton* (Greek for “impossible”; Canter 1930 provides an overview of its different uses in Greco-Roman Antiquity; Rowe 1965). The *adynaton* is used particularly in emphatic and

hyperbolic (self-)assurances that something undesirable will never happen, that it is in fact *impossible*, as in “this will happen when pigs fly,” i.e., never. The rhetorical effect is produced by evoking something “really” impossible (flying pigs). The most reliable anchor for the *impossible* is nature and its laws, which cannot be broken, but culturally entrenched phenomena that are considered unchangeable can equally be anchors for the *impossible*. Our earlier example “this will happen when pigs fly” is an expression of impossibility or inconceivability anchored in nature; “Hell will freeze over before this would happen” is anchored in our cultural imagination of Hell. These forms of hyperbolic expression occur frequently in high literature, sometimes in a whole series (“sooner A, B, and C will happen than x”). A striking example is provided by Euripides’ *Medea*, when in a choral ode the tragic chorus expresses its shock at seeing the impossible having come true: the moral status of the sexes has been inverted, in that the male hero Jason has proved to be faithless, while the female foreigner Medea seems to have the moral high grounds (Mossman 2011, 257; Canter 1930, 36). This virtually unimaginable situation is anchored in an inversion of the laws of nature and of the cultural order: “The streams of the sacred rivers are flowing uphill, and justice and all is turned backward” (Euripides *Medea*, 410–411).

Such seemingly impossible things coming true in an unexpected way and with a shocking result is a not uncommon narrative motif. Shakespeare’s Macbeth will have nothing to fear until Birnam forest comes to Dunsinane, say the witches. Forests are not in the habit of traveling. This prediction, then, anchors Macbeth’s faux sense of security in the natural order. However, when Macbeth’s enemy, Malcolm, orders his soldiers to break off boughs from the Birnam forest trees and hold them in front of them on their march, the people in Macbeth’s castle see the forest approaching their stronghold, and indeed Macbeth’s end is near. The seemingly impossible came through. The failure to imagine its possibility seals the usurper’s fate. Playing with *adynata* presupposes a notion of the possible and uses our experience of reality as an anchor.

Anchoring the Possible: Calibrating Past, Present, and Future

Anchoring the imagination of the possible is frequently predicated on a construal of the relationship between past, present, and future. In imagining the possible we temporarily leave the here and now of current experiences to explore and “play” with the past, the future and alternative spheres of influence in order to shape the present (Abraham 2020). Past and present provide (a semblance of) stability to the process of imagination, in their function as anchors and launch pads. The stability is apparent rather than real, since the present and our memory of the past are themselves also under constant construction and are the subject of competing forms of societal imagination and negotiation (Assmann 2011). A form of imagination is operative, then, even in our calibration of past, present and future in relation to one another: we construct narratives about their particular relationships. These narratives are not only used to underpin our understanding of the present; they also help us in projecting possible forms the future may take. The process of imagining new futures is stimulated particularly effectively through contact with different perspectives. Processes of cultural contact and globalization force people to confront alternative world views and perspectives and open up new forms of imagination. These in turn are triggers for development (Zittoun and Glăveanu 2018; Zittoun et al. 2020). Elsewhere in this volume we have illustrated how that process works for the period of Antiquity (see “► Antiquity”).

The past “is a social construction whose nature arises out of the needs and frames of reference of each particular present” (Assmann 2011, 33). This does not condemn us to “presentism,” which would presuppose an infinitely malleable past (Koning 2010, 9) – there are clearly stronger and weaker constructions of the past. However, it does mean that relations with the past are ambiguous by nature and can be understood as “enabling” or “disabling.” Either way, the past serves as a (construed) anchor, positively or negatively, for our

understanding of the present and the imagination of the future. In that sense, imagining the present or the future would be impossible without the past. The process of anchoring, forging the connection between the newness of the present and the future and the (perceived) familiarity of the past is central to how imagination works as a sociohistorical process.

Conclusion

The main thesis for which we have argued in this essay, is that every form of imagination needs a starting point or anchor: imagination is concrete. It is a situated, embodied process distributed across brains, bodies, and things (Barona and Malafouris 2021). Imagining the possible takes its starting point from a particular sociohistorical context filled with peoples, things, and ideas (for important examples and case studies, see Dijkstra 2020; Wessels and Klooster 2021). Constituting the present and imagining the future is thus simply impossible without the effort of calibrating the past in relation to them. The process of anchoring, therefore, is fundamental to what imagining is about (Fuentes 2020; Glăveanu 2021). Any theory or analysis of the Possible should therefore take the concept and practices of anchoring into account.

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Anticipation

Roberto Poli

Department of Sociology and Social Research,
University of Trento, Trento, Italy

Abstract

Anticipation is the translation into action of what has been seen in the exploration of possible futures through forecast and foresight exercises; it can be viewed as the capacity to use the future in the present. The future can be exploited in the present only if the realm of reality is far from being a given – that is, completed – totality. As a consequence, the laws of sociology, psychology, biology, or even those of physics may change together with the maturing of their ontological conditions.

Keywords

Futures studies · Rosen · Bloch · Real possibility · Latency · Tendency · Utopia

Introduction

Anticipation comes in different guises. As a lay term it refers to all forward-looking attitudes and activities. As a technical term, it assumes two different meanings: as a distinct aspect of futures studies that extends beyond forecasting and foresight modeling and as the qualifier “anticipatory” in the expression “anticipatory systems” (for further details see the entries on ► [“Forecasting”](#), ► [“Foresight”](#), and ► [“Anticipation Systems”](#)). These two meanings of “anticipation” pertain to two different frameworks. As different as they are, I take care to identically define these two acceptations of anticipation in order to facilitate their mutual translation (Poli 2017a).

Anticipation occurs when the future is used in action. From this perspective, anticipation consists of two necessary but distinct components: a forward-looking attitude and the use of the former’s result for action. A weather forecast in itself

is not anticipatory in our sense. Watching a weather forecast and, as a consequence, taking an umbrella before going to work is instead an anticipatory behavior.

Anticipation’s two components are consistent with Rosen’s definition: “An anticipatory system is a system containing a predictive model of itself and/or its environment, which allows the system to change state at an instant in accord with the model’s predictions pertaining to a later instant” (Rosen 2012). As explained elsewhere (see the entry ► [“Anticipation Systems”](#)), the expression “predictive model” is too restrictive and should be substituted by an expression including both forecasting and foresight.

The anticipatory processes and models that allow the future to become part of actions in the present may be either internal or external to the anticipating system. Watching a weather forecast and behaving accordingly is to use an external model; actions taken on the basis of subjectively constructed psychological expectations are internal.

Internal anticipation is particularly important for understanding the anticipatory behavior of people, groups, organizations, and institutions. As significant as anticipation may be for action, no anticipation is a guarantee of success. Continuing with the previous example, taking an umbrella before going to work does not guarantee that it will rain. While anticipation helps to develop more sophisticated courses of action, and is necessary for understanding much individual and social behavior, anticipation is not always correct. First and foremost, anticipation is a feature characterizing the behavior of suitably defined complex systems.

The argument is that behavior is primarily anticipatory, while reactive behavior is only a secondary – albeit important – component of behavior. A system behaving in an anticipatory manner makes decisions in the present according to “anticipations” about something that may eventually happen in the future.

One of the key starting points for research on anticipation is the contention that the currently dominant theories of time and causation are unable to incorporate anticipation, they therefore require thorough revision.

Anticipation is a widespread phenomenon present in and characterizing most types of real systems. Life in all its varieties is anticipatory; the brain works in an anticipatory manner; the mind is obviously anticipatory; society and some of its structures are anticipatory; even non-living or non-biological systems can be anticipatory.

The Four Meanings of Anticipation

Each of the four levels of analysis composing Table 1, as discussed in the entry entitled ► “Fore-sight”, presents an aspect of the theory of anticipation.

Compared to the difference between forecasting and foresight, anticipation is a translation into action: a future exercise that does not translate into decisions and actions is a failed exercise. Compared to megatrends and explorations, anticipation is a generation and consumption of the future: the decisions and actions that we take increase or decrease the space of possibilities in which we can intervene (see ► “Forecasting”). With regard to risks and uncertainties, anticipation is a matter of ignorance: what we do not know is more important than what we know. Compared to complicated and complex, anticipation is considered as the ability to follow changes in the system, grasping in advance the moves and steps that it will make.

The World as an Incomplete Process

Anticipation as the translation into action of what has been seen in the exploration of possible futures through our forecast and foresight exercises can be viewed as the capacity to use the future in the present (Poli 2019). The idea of “using” the future or “working” with the future

raises various questions. Science is still dominated by the practice of looking back (at the data), thus observing the future only within the limits of extrapolations from the past (see the entry ► “Forecasting”). The transformation from science oriented toward the past to science oriented toward the future (Seligman et al. 2013), or the idea of exploiting scientific research to “generate future” (Gergen 2015), are themes undergoing development but still completely in the minority (Poli 2017a, 2019). Yet what matters is understanding that a proper inclusion of the future within science requires developing a new conception of science (Rosen 1991, 2012).

To begin understanding some of the changes needed, it is advisable to consider the ideas of the thinker who has conducted the most extensive categorical analyses of the future. The entire work of Ernst Bloch is devoted to the future, from the early *Geist der Utopie*, through his magnum opus *Principle of hope* (Bloch 1995), to the *Tübinger Einleitung in die Philosophie* (partially translated as (Bloch 1970) and *Experimentum mundi*.

From an ontological perspective, Bloch (as well as Hartmann, see (Poli 2012) frames ontological categories as neither the most universal predicates nor a priori functions of the intellect. Instead, ontological categories are modes of being, the innermost determinations of being (on categories as modes or principles of being see (Poli 2007, 2009, 2010, 2011a, b). Bloch adds that ontological categories are categories of the not-yet-being, because the main feature of real being is its openness to the future. Precisely for this reason, Bloch’s ontology can be termed the “ontology of the not-yet.”

Bloch’s main claim is that the realm of reality is far from being a given – that is, completed – totality. On the contrary, the real continuously unfolds, and it may well be that the true nature of the real has still to surface. Furthermore, the conditions making the true nature of the real possible may still be pending, in the sense that they may be still in formation. Bloch’s claim goes deeper than the idea that the true nature of the real is hidden, awaiting triggers to activate and make it visible. Bloch’s position is more radical

Anticipation, Table 1 The four layers of futures studies

Layer 4	Complicated	Complex	Anticipatory
Layer 3	Risk	Uncertainty	Anticipation
Layer 2	Megatrend	Exploration	Anticipation
Layer 1	Forecasting	Foresight	Anticipation

than this: it amounts to the claim that, at least in some cases, the conditions making the true real possible are still entirely lacking. From this point of view, the idea arises that the laws of sociology, psychology, biology, or even those of physics may change together with the maturing of their ontological conditions.

The “real” that interests Bloch most is the real of social and, secondarily, psychological being. While his categorical framework does not exclude the possibility that the conditions making the lower layers of reality possible may still be unfolding or under formation, Bloch’s interest is focused on the realization of human beings.

The World as an Experiment

As said, Bloch sees the world as an unfinished process, the main reason being that the processes that are the world continue to unfold. Precisely because the world is an unfinished process, it can be taken as an experiment – an *Experimentum mundi*, as the title of Bloch’s last major work reads.

Being in a proper experimental mode, it is still undecided whether the world will arrive at some positive outcome or end in disaster – at least for us. That is, the experiment that is the world may fail (again, for us).

Since the world’s horizon is still undecided, one may claim that: “the world itself is not yet at home.” On the contrary, the world is in a state of continuous tendency toward new horizons, even if these horizons are far from being crystal-clear, visible, or well-defined endpoints. The tendency toward a horizon shows that the processual unfolding of the world is neither random nor blind but includes a direction.

Latency, Tendency, and Horizon

In order to understand the ontological nature of the world, what matters most is the tendency itself, more than its starting and ending points. However, in order to determine the details of this ontology, a clarification of the starting and ending

points of the tendency is needed. In Bloch’s terminology, these are respectively called “latency” and “horizon.”

To understand this tangled situation, one needs an ontology of the not-yet, of being as processual, and therefore of being understood as an incomplete, still unfolding reality, indeterminate with respect to its endpoint, leaving room within its core (starting point) for entirely new determinations as well as for growing or maturing ones.

Real Possibility

The modal category of possibility thus moves to central stage. Possibility here is understood as “real” possibility and not merely as “conceptual” possibility. That is, real possibility is possibility grounded in the real processes of the world, and it is different from possibility as conceptual variation.

Following Aristotle, Bloch distinguishes between *dynamei on*, “possible being,” and *katà to dynatòn*, “according to possibility.” Possible being is wider than being according to possibility. One can understand possible being (*dynamei on*) as “possible in general,” while being according to possibility (*katà to dynatòn*) is what governs the passage from general possibility to actuality.

Bloch further distinguishes what is objectively possible from what is really possible. Objectively possible is everything whose occurrence cannot be excluded on the basis of the present, partial knowledge of its actual conditions. Instead, something is really possible when its conditions are not yet fully assembled within the object itself. This may imply that the said conditions are still maturing or even that they are still entirely lacking. Real possibility comes in different guises: as the initial not-yet, as partial conditioning, as subjective capacity, and as the sea of possibility surrounding existents.

Entities Are Categorically Open

The future as an ontological category makes sense only if entities are categorically open – that is to

say, only if new determinations can be superimposed on an entity's previous determinations. This means that the ontological nature of entities is not thoroughly established. New determinations can always appear. Entities are never totally given in advance, and they have some kind of tendency toward the future. Just as understanding the past often helps the understanding of actually given situations, prefiguring the future may also aid understanding of actually given situations. As a preliminary note, it is important to distinguish the problem of missing information (the entity is imperfectly or only partially known) from the problem of the entity's categorical openness, that is, conditions of the entity that have still to mature. The former is an epistemological problem and does not bother Bloch (or Hartmann for that matter). The latter is a truly ontological problem.

"Categorical openness" means that the entity is not maximally determined; some of its aspects are still hidden. Better some of its determinations may still be lacking. The difference is that hidden components are there, waiting for proper triggers to activate them. On the other hand, lacking components relate to incompletely present conditions and aspects. Their incompleteness may be ascribed either to still maturing conditions or to new conditions that may subsequently arise (Poli 2006b, 2011a).

Not-Yet

The future-oriented category of the not-yet is anchored in the processual nature of the world. According to Bloch, everything becomes. The not-yet is the direction, the goal toward which everything aims. A description of the present (or, for that matter, the past) state of the world which does not include its not-yet is defective. It lacks the most authentic dimension of being, its aspiration toward completion.

The processual basis of the not-yet means that the identity of entities is not present internally to them, and for this reason entities must go outside themselves. For the time being, let me note that the process of going outside to find one's identity requires a direction – but it does not have to be a

predetermined or a once-and-forever pre-established endpoint. On the contrary, the endpoint may be present generically, and, properly speaking, it may even not exist. Therefore, the endpoint is not an attractor, at least not an attractor in the sense in which the term is used in the theory of dynamic systems. The not-yet works as a pulling force taking everything out of itself, without, however, acting from an explicitly pre-given ending point and with a pre-established intensity. On the side of the entity, the endpoint is its horizon; the force is called latent or latency, as in the expression "the latency of things"; and the direction is tendency.

While the latency of things refers to the force driving them to acquire their true identity – to be what they will become, that is, the identity of becoming – the not-yet of things is precisely this identity as seen by the entity still lacking it. Modally, the not-yet is the real possibility of the thing, what the thing can really become. "Really" here refers to the conditions that make achieving given targets possible – respectively, impossible – where possibilities are concrete, partial conditions of realization.

Realizations depend on two series of conditions: possibilities, or active powers able to change things, and potentialities or the passive capacities that things have to be transformed. Real possibility – the category of categories, as Bloch says – is partial conditioning. These partial conditions are open to the future as anticipations of open possibilities.

Bloch's now is not the present. The now does not last; while the present lasts for a while, it corresponds to what has been called "thick present" (Poli 2011c). The present is more than an instantaneous now, because it includes the pasts from which it derives and the futures in which it enters. Moreover, presents can have different durations. As Bloch explicitly states, there is no univocal delimitation of the present. Entire years and even decades have been counted as presents.

The outward unfolding of things is centered on the process of becoming, not on its already realized outcomes. The new emerges in the now into the present; the present then is creative; it is the open frame where the new may unfold.

On the contrary, the past is closed, it has become. However customary, this description of the past is far from being complete. Presents have their futures, both as components of the presents themselves and as subsequent generated presents. When presents fall into pasts, the futures intertwined with them fall into the past as well. Memories of the futures locked into past presents can still ring out in subsequent presents. Past presents include different types of futures. Antiquity for the Renaissance was less “closed” than antiquity for the Middle Ages. The productive nexus between the present era and a previous era is always a nexus that includes the future that was embedded in the past era. In this sense, even archaic archetypes may continue to be productive, perhaps as fragments needing later integrations.

It ensues from these remarks that the logic of “before” and “after” does not capture time. Time is more than a linear series of chronometric moments. Apart from the nexuses linking past futures to present futures, temporalities also depend on the events in them, and these events are organized in levels of reality and their multifarious relations.

On distinguishing chronometric time and real time, the possibility arises of delays or accelerations of the latter with respect to the former. The real time of living or social beings may show their backwardness, their being left behind by the clock of biological or social history; or it can show their forwardness, their capacity to open new avenues and act as precursors (Poli 2017b).

Causality for Bloch is more than connection between completely determined events. The most interesting cases are those of causal nexuses in which one can intervene and thereby produce new effects. According to Hartmann’s ontological terminology, this is a case of “overforming.” While we cannot modify the laws of physics, we can exploit them for our purposes (e.g., building a bridge): physical causal determinations are overformed by our intentional determinations.

To be noted is that, together with Hartmann, Bloch understands causality as a creative process (Poli 2012).

Causes should not be confused with conditions. The latter have different degrees of maturation,

while the former do not. Something can be more or less conditioned. The claim that something is more or less caused makes no sense. Partial conditioning makes sense; partial causation does not.

Bloch distinguishes among law, tendency, and latency. Law is the realm of repetition; where law dominates, novelties are lacking. By contrast, tendency is openness to the new; it is the source of ontological creativity. Tendencies need subjective interventions. An interesting generalization of Bloch’s framework includes the idea of tendency as intervention by other levels of reality: that is, overformation of the lower levels by the higher ones. In this case, the interplay between law and tendency becomes the difference between determining processes operating within a given level of reality and determining processes among levels of reality (on levels of reality see Poli (2001, 2006a, 2007).

Finally, latency is the ground of tendency. The unfolding whole, the whole in movement, the whole together with its tendency, includes latency as the ground from which tendency arises. According to Bloch, latents are not entities; even less are they closed and hidden factors or components, things that need to be unpacked; nor is a latent a hidden force sleeping on a tensed spring that could be awakened by releasing the spring.

Latency is the way in which the still nonexistent aim manifests itself in the tendency. It is anticipation of the endpoint.

Horizon and Front

On subjecting the openness of entities to closer scrutiny, further categories emerge, the most important being those of horizon and front.

As we have seen, everything real, being temporal, tends toward something else. The concept of horizon – as opposed to the concept of boundary used to distinguish a system from its environment – precisely suits our purpose. As Luhmann notes, “the essential characteristics of an horizon is that we can never touch it, never get at it, never surpass it, but that in spite of that, it contributes to the definition of the situation” (Luhmann 1976).

The entity's horizon delimits that fragment of the space of possibilities whose conditions are maturing. As its conditions mature, the entity's horizon moves ahead. Without horizons, entities are dead. They may still continue along their trajectories, but no real novelty can ever appear: everything is forever fixed. Horizons have fronts – “areas” where novelties appear. The front is the growing, maturing, changing section of the horizon.

Authentic and Nonauthentic Futures

Futures can be either authentic or nonauthentic. Nonauthentic futures are repetitive futures, futures without novelties. According to Table 1, they correspond to forecasts, megatrends, risks, and complicated systems. Moreover, non-authentic futures arise as schemata, while authentic futures are embedded in dawning, unfolding events.

One of the major tasks of an ontology of the future is to provide guidance in distinguishing genuine from non-genuine futures, open from closed, and unadulterated from deceptive, adulterated futures. The latter comprise features such as repetition, forecast, megatrend, and risk. The former comprise novelty, foresight, exploration, and uncertainty. The terms in the two lists are counterpoints to one another: repetition against novelty, forecast against foresight, megatrend against exploration, and risk against uncertainty. This table of oppositions highlights the most important opposition between the models exploitable by futures studies.

Concrete Utopias

The main aim of Bloch's *Principle of Hope* is to develop the idea of “concrete utopia.” A utopia is said to be concrete when it is able to anticipate the not-yet-conscious and to use it within the not-yet-become that is latent in ongoing historical processes. Interestingly, however, Bloch turns the idea of utopia from a millennial-type change into a component of daily life. In this regard,

Appadurai notes that “Ernst Bloch's grand work on hope marked a transition in European social thought from a preoccupation with utopias, radical revolution, and millennial change to more nuanced engagements with hope as a feature of quotidian social life and with the conditions for its cultivation” (Appadurai 2013). In other words, Bloch distinguishes between utopia as focused on the endpoint and utopia as focused on everyday life, especially its most insignificant? aspects – which amounts to saying that the roots of the future are in the present, if only can we learn to see them and develop the capacity to use them.

Cross-References

- Anticipation Systems
- Forecasting
- Foresight
- Futures Studies
- Utopia

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Anticipation Systems

Roberto Poli
Department of Sociology and Social Research,
University of Trento, Trento, Italy

Abstract

Anticipatory systems are a class of systems broader than Newtonian ones. The move from Newtonian systems to Anticipatory systems entails giving full significance to the future. Put otherwise, Newtonian systems are a subclass of Anticipatory systems. To understand their differences, one can distinguish between what a system is *made of* (structure) and what a system is *made for* (function). The former attitude is isolative; the latter is relational. These

two different modes of analysis (through elements or through subsystems) generate two widely different frameworks because each function can be implemented by different structures and each structure can express different functions.

Keywords

System · Newtonian system · Effector · Composition · Side effect · Analysis · Complicated · Complex

Introduction

Whichever idea of system one may adopt, it should be noted that all the languages used so far to construct systems have their roots in the mechanics of Newton (Rosen 1974). This apparently bold claim can be clarified by specifying the information needed to construct a (Newtonian) system. In so doing, one can see that all (Newtonian) systems require the specification of two different types of information:

- The *instantaneous state* of the system, i.e., what the system is like at any instant of time
- How the system *changes* state, i.e., how the system moves from present or past states to new states as a consequence of the forces imposed on it

Put briefly, instantaneous states involve the specification of state variables, while a system's changes involve the specification of that system's equations of motion. Input-output (IO) models (also known as black box models) are only variations of (Newtonian) models which do not challenge the above claim. Even if IO models do not have state descriptions, inputs can be manipulated, and for each input, the corresponding output can be observed. A straightforward translation into the Newtonian framework connects inputs to the forces imposed upon the system and outputs to states. Newtonian mechanics studies the ways in which states change when the forces are kept fixed. IO models study the ways in which changes in the forces influence the states of

the system. Therefore, “the two modes of system analysis, at first so different, are in fact essentially the same, and differ primarily in emphasis” (Rosen 1974).

For the purposes of this entry, to be stressed is that all Newtonian systems share the basic assumption that the dynamics of the system depend crucially on present and past states of the system. No future information is ever allowed to play any role whatever. Let us state it explicitly.

Main Assumption of Newtonian Systems: Never Allow Future States of the System to Affect the Present Changes of State

As far as physics is concerned, only present states and present forces are taken into consideration. On the other hand, biological, psychological, and social systems need to include also past states (memory) and often past forces. This is a first major distinction between physical (or non-living) and non-physical (or living) systems. However, the inclusion of memory, as relevant as it may be, is not sufficient for proper distinction between non-living and living systems. Memory-based systems are still Newtonian, i.e., mechanical, systems, while living systems seem to require something more.

What is eventually required is to add a second and deeper feature, the inclusion of future states. I shall call the systems that include past, present, and future states *anticipatory systems*. As before, let me state explicitly the main assumption of anticipatory systems.

Main Assumption of Anticipatory Systems: Future States May Determine Present Changes of State

As to be expected, the logic of Anticipatory systems is very different from the logic of Newtonian systems. Before entering into details, to be noted is that during the twentieth century, anticipatory theories were repeatedly proposed and in fields as different as physics, biology, physiology,

neurobiology, psychology, sociology, economics, political science, futures studies, computer science, and philosophy. For an overview, see Poli (2017a, 2019a).

To establish a provisional reference point, I shall start from Robert Rosen’s definition of anticipatory system: “An anticipatory system is a system containing a predictive model of itself and/or its environment, which allows it to change state at an instant in accord with the model’s predictions pertaining to a later instant” (Rosen 2012, pp. 8, 313, originally published in 1985). The expression “predictive model” covers the level of forecasts only (see the entries ► “Forecasting” and ► “Foresight”). As I have explained elsewhere, anticipation is not limited to forecasting models alone; it also uses both forecasts and foresights (Poli 2017a, 2019b).

The anticipatory processes and models that allow the future to become part of actions in the present may be either internal or external. Watching a weather forecast and behaving accordingly is to use an external model; actions taken on the basis of subjectively constructed psychological expectations are internal. Internal anticipation is particularly important for understanding the anticipatory behavior of people, groups, organizations, and institutions (Poli 2016).

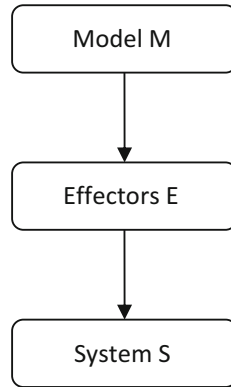
A Model of Anticipatory Systems

Let me start from any whatever system *S*, which may be an individual organism, an ecosystem, a social system, or economic system. For simplicity, I assume that *S* is an ordinary (i.e., non-anticipatory) dynamic system. A second system, called a model *M* of *S*, is then associated with *M*.

The only preliminary condition I need to assume is that the dynamic evolution of *M* proceeds more rapidly than the dynamic evolution of *S*. In this way, *M* is able to predict the behavior of *S*. By looking at *M* we obtain information about a later state of *S*. So far nothing is really new.

The real novelty intervenes by assuming that *M* and *S* can interact with one another, i.e., that *M* may affect *S* and *S* may affect *M*.

Anticipation Systems,
Fig. 1 Basic components
 of an anticipatory system



The direction from S to M can be seen as an updating or improvement of M. This direction is rather straightforward, and I shall skip its analysis. On the other hand, the opposite direction from the model M to the system S is much more intriguing.

In order for M to effect S, M should be equipped with a set of effectors E, which allow M to operate on S (or on the environmental inputs to S) in such a way as to change the dynamics of S.

Figure 1 depicts in a hyper-simplified way (e.g., without considering either the environment or the upgrading of M) the logical connections between S, M, and E.

If we consider the three systems as parts of one single system, the latter will logically be an anticipatory system in which modeled future behaviors determine present states of the system. As Rosen said “M *sees* into the future of S, because the trajectories of M are faster than those of S” (Rosen 1974).

A simple question will aid understanding of the connections among M, E, and S: How can the information available in M be used to modify the properties of S through E?

The simplest answer is to divide the state space of S (and hence of M) into desirable and undesirable states. As long as the dynamics of M remain within the desirable region, no action is taken by M through the effectors E. On the other hand, when the dynamics of M move into the undesirable region (implying that the dynamic of S will later move into the corresponding undesirable region), the effectors are activated to keep the dynamic of S out of the undesirable region.

Rosen notes that “from this simple picture, a variety of insights into the nature of ‘planning’, ‘management’, ‘policies’, etc., can be extracted” (Rosen 1974).

Anticipatory systems can go wrong in different ways, which can be summarized under the three headings of:

- Bad models
- Bad effectors
- Side effects

A model can be bad for:

- Technical reasons (ignoring relevant state variables, wrong specification of the equations of motion)
- Selection of an incorrect paradigm (modeling anticipatory behavior by means of non-anticipatory models)
- Wrong correspondence between the states of system S and the states of the model M

Effectors can be bad because they:

- May be unable to steer S
- May fail to manipulate the variables of S appropriately
- May be programmed badly

The third family – the one called “side effects” – is definitely the most interesting case. The main outcome obtained on studying anticipatory systems is that side effects are *inherent* properties of the framework. Side effects arise even if the model M is perfect and the effectors E are perfectly designed and programmed. Even if everything is perfect, there will always be unintended consequences.

Side Effects

Side effects (or unintended consequences) are a structural feature of anticipatory systems. By default, when the system S carries out a particular activity A, S uses only some of its internal

resources. Technically speaking, S uses only some of its degrees of freedom.

In more intuitive terms, organizations (systems) are such that for them the same internal structure is usually involved simultaneously in many different functional activities. Side effects are due to the tension between the fact that (1) the equations of motion of a system S link together all the variables defining S, while (2) the variables not involved in a particular functional activity are free to interact with other systems in a non-functional (eventually dysfunctional) way (Rosen 1974). As a consequence, all the functional activities of a system S are prone to be modified or lost over time.

It is interesting that, given a system S, any functional activity A of S can be modeled by a model simpler than the model of S. The reason is evident: the model of A does not include all the variables of S but only those relevant to the selected activity A. As a matter of fact, Rosen notes that “it is largely because of this property that science is possible at all.”

On the other hand, no model whatsoever has the capacity fully to capture the potentialities of a system S for interactions with arbitrary systems, because any interaction is specific (i.e., a functional activity). Except for simple systems, no model can represent all the system’s relevant properties and/or interactions with other systems (Rosen 2012).

A major consequence of the theory is that effectors E will in general have effects on a system S other than those which are planned. Side effects are a general property of anticipatory systems, and there is no general way to get rid of them.

Back to Systems

The move from Newtonian systems to Anticipatory systems implies giving full importance to the future. Anticipatory systems are a class of systems broader than Newtonian ones. Put otherwise, Newtonian systems are a subclass of Anticipatory systems. This is a major issue because it changes our idea of science (Poli 2017b). To understand at

least some of the implied issues, let us resume the idea of “system.”

As well-known, the official founding father of the theory of general systems is Bertalanffy (1968, 1972). There were a few preliminary works in the field of general systems theory before Bertalanffy. In this regard, from a philosophical point of view especial mention should be made of Hartmann and Whitehead (Hartmann 1912; Whitehead 1967). The basic ideas of the theory are spelled out in Bogdanov’s *tektology* (Bogdanov 1984), an early Russian version of systems theory. Other early developers of a systemic perspective were Lotka and Koehler (Koehler 1920; Lotka 1925).

To grasp the novelty of the systemic position, consider the principle of composition, one of the fundamental assumptions of classical science (Poli 2017a). According to the principle of composition, an entity under investigation is decomposed into parts. The idea is that the entity is made of these parts so that decomposition into parts eliminates no relevant information. This assumption is universally valid, provided that the following conditions are fulfilled: (1) the interactions among the parts do not exist or are negligible, (2) the relations describing the behavior of the parts are linear, (3) the whole resulting from the parts does not engage in any functional behavior. These are very severe restrictions, however; very few if any natural systems comply with them. Systems in general do not fulfil these conditions. The parts of a system are in interaction, their relations in general are non-linear, and systems are encapsulated within other systems. One may describe the difference between the two cases as the difference between not organized complexity, well-represented by classic physics, and organized complexity, well-represented by biology (Weaver 1948).

Fundamental for organized complexities is the concept of hierarchical order, according to which systems are decomposable into sub-systems and these into further sub-sub-systems.

Note that the starting point of this new conception is the system (the whole) and that systems are decomposed into sub-systems, not into elements or atomic components.

In the same manner that the Copernican revolution was far more than the ability to calculate the movement of the planets better, and relativity has been much more than an explanation of a small number of recalcitrant physical phenomena, the introduction of system theory is more than the study of nonlinear dynamics.

Two Kinds of Analysis

How should one study a natural system? As said above, the usual strategy is to break the system down into its constituent elements. If the resulting elements are still too complex, the same procedure is repeated until the analyst arrives at elements simple enough to be understood. Ideally, once the “elementary” elements or particles have been found, the original system can be reconstituted from them.

This strategy hints at Descartes’ methodological rules. The implicit assumption is that all the relevant properties of a system can be recovered by taking its elements and their relations into account. This divide and rule strategy has proved immensely successful. The problem, however, is that some systems cannot be fragmented without losing information (Poli 2017a). The simplest reason is that there are systems for which the analytic strategy of breaking them down into elements without losing information does not work properly. More than this, systems which are entirely governed by their elements (as well as those entirely governed by their past) are rare. The vast majority of systems exhibit a different pattern: they depend not only on their elements but also on the system that results from them, and eventually also on higher-order systems of which they are parts (e.g., organisms, communities).

A promising strategy is to distinguish between what a system is *made of* (structure) and what a system is *made for* (function) (Rosen 1971). The former attitude is isolative; the latter is relational. The distinction is therefore introduced between two different modes of *analysis*: the analysis of a system into its elements and the analysis of a system into its subsystems.

One should be careful to avoid the assumption that each functional activity implies a given structure that supports it. In fact, the relation is far from being one-to-one; instead a many-to-many relation is implied, in the sense that each function can be implemented by different structures and each structure can express different functions.

An example may help. Consider a particular company. To survive and develop, the company should perform a variety of different functional activities, including the design of new products, producing, storing and circulating them, managing employees and workers, etc. Any of these activities may be performed by a specialized unit, or they may be split among a variety of units in many different ways. Companies make different choices in this regard. All the possibly different structural choices notwithstanding, the functions to be performed are analogous. Structures divide; functions unify (Poli 2017a).

One of the major differences between analysis via elements and analysis via subsystems is the following: given a system S , there is only one maximal set of component elements, while there are many ways to decompose the system S into functional subsystems, both at different hierarchical levels and from different perspective points.

To compound the problem, the functional perspective is not limited to the subsystem/system relation. The system itself enters into functional relations with its environment or, better, with other systems in its environment. And, as the case may be, it can establish different functional relations with different systems. Moreover, different functional subsystems can develop different functional relations among themselves. The social realm furnishes numerous pertinent examples: one may consider functional subsystems such as the economic, political, legal, scientific, etc. ones and the network of their functional interdependencies.

The availability of different kinds of analysis (and, possibly, different kinds of synthesis) shows that different strategies can be used. It is therefore important to understand the strengths and weaknesses of each strategy.

Complicated and Complex

The two forms of analysis distinguished above underlie the difference between complicated and complex: complicated systems are understood through *structural* decomposition, i.e., through the segmentation of the system into disjointed structural parts and the relationships that connect them. If a part is still too complicated, it is further divided into even smaller parts and their relationships. Complex systems, on the other hand, are understood through a *functional* analysis, that is, through the *activities* exercised by the system toward other systems at the same level or a superior level. Structural and functional analyses can only be coordinated in very special cases. In general, however, their results are different and their correlations are anything but trivial (both conceptually and mathematically) (Louie and Poli 2011, 2017).

Natural systems (including social and psychological systems) have a finite number of structural parts; on the contrary, the functions that those systems can perform are potentially unlimited. The main way to limit the set of functions that a system can perform is to add constraints to its environment, for example, by allowing the system to interact only with certain other types of systems. This means that functions can be limited by closing the system (eliminating interactions with other systems) or by closing its environment (allowing only specific interactions).

The third difference between complicated and complex systems is the extent to which they can be represented by models. Complicated systems can, at least in principle, be fully understood and modeled, i.e., they can be fully captured by appropriate models. Although the implementation of these models can be (and often is) partial, for example, because of a lack of data or because the development of a complete model is too expensive, these are purely contingent obstacles. In principle, it is always possible to build a complete model of a complicated system. Complex systems, on the other hand, can never be completely captured by any model. The models that depict them, even in principle, are always incomplete and diverge over time, i.e., they

gradually lose the ability to grasp the dynamics of the system that they should represent.

About Houses and Cats

The difference between complicated and complex can be described in many different ways (which, in turn, is a characteristic of complexity). Perhaps the most intuitive version is the one that distinguishes complicated systems from complex ones on the basis of two different meanings of the whole-part relationship.

Consider the structure of a house. A house has several structures that are part of the whole: on the one hand, it can be divided into the materials that compose it (bricks, pipes, wood?, etc.); on the other hand these same materials are organized in such a way as to produce functional units (kitchen, bedroom, living room, etc.). The critical point is the priority of the parts over the whole. The house is the product that results from appropriate amounts of materials, properly organized.

Let us now consider a cat. Cats are not produced in the same way as houses. Their production does not start with appropriate amounts of materials which are then assembled. Eventually, since the fecundated ovum, a cat is already a whole. All parts are produced by the whole, and all internal differentiations are produced by the whole. If certain minimum conditions are met (food and air, for aerobic organisms), everything else is produced internally. In this case the whole prevails over the parts.

Obviously, we could analyze the cat in the same way as we analyze the house, decomposing the whole into different types of parts; but it would be as if we were taking a picture and transforming the underlying generative processes into a static image. It is the same logic that is valid between local simulation of single aspects (the point of view of complicated systems) and processual modeling of the whole (the point of view of complex systems).

The systems that operate in the two cases are radically different. In the first case, these are systems that can be understood by analyzing their different parts and the way in which they behave.

The *feedback* cycles of *system dynamics* are perhaps the best-known version. In the second case, however, the recourse to *system dynamics* corresponds to the adoption of a reductionist viewpoint that forcibly translates complexity into complication.

Cross-References

- [Anticipation](#)
- [Complexity](#)
- [Forecasting](#)
- [Foresight](#)

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Antiquity

Miguel John Versluys¹ and Ineke Sluiter²

¹Department of Classical and Mediterranean Archaeology, Faculty of Archaeology, Leiden University, Leiden, The Netherlands

²Department of Classics, Faculty of Humanities, Leiden University, Leiden, The Netherlands

Abstract

This essay presents conceptualisations of the Possible as they were developed in “(Classical) Antiquity.” This period is defined as encompassing the history of the Greek and Roman civilizations in their Mediterranean and Eurasian contexts between approximately 500 BCE–500 CE (Naerbout and Singor 2014). First, we provide a general overview of how people in Antiquity coped with the uncertainty of future possibilities, which was mainly through divination, ritualized procedures for seeking knowledge of the (immediate) future. Secondly, we discuss how the horizon of the Possible was expanded during this period through increasing connectivity (Globalization). This facilitated a new role for imagination as part of social life as there was now more “Other” to imagine than (ever) before. We argue that paying attention to the (deep) past of socio-cultural concepts like the Possible matters greatly for two main reasons, one methodological and the other ontological. The ability to move between “what is” and “what could be” has been shown to be an important constituent of the human niche. A deep history of the Possible therefore provides a way to investigate the development of human

imagination. The other main reason to argue for a deep history of the Possible is ontological, in that it focusses on future-oriented activities in past societies with their specific worldviews, which produce and define specific conceptualizations of the future. However, *their future* may not be the same as *our past*. Our own specific ontology, our philosophy of existence, heavily influenced by Modernity, is thus put into perspective.

Keywords

Antiquity (Greco-Roman) · Divination · Imagination · Globalization · Anchoring

Introduction: Toward a Deep History of the Possible

This essay presents conceptualisations of the Possible as they were developed in “(Classical) Antiquity.” This period is defined as encompassing the history of the Greek and Roman civilizations in their Mediterranean and Eurasian contexts between approximately 500 BCE–500 CE. First, we provide a general overview of how people in Antiquity coped with the uncertainty of future possibilities, which was mainly through divination, ritualized procedures for seeking knowledge of the (immediate) future. Secondly, we discuss how the horizon of the Possible was expanded during this period through increasing connectivity (Globalization). This facilitated a new role for imagination as part of social life as there was now more “Other” to imagine than (ever) before. We argue that paying attention to the (deep) past of socio-cultural concepts like the Possible matters greatly for two main reasons, one methodological and the other ontological.

Like us, people in the past were intensively engaged with “that which is not yet there” (Glăveanu 2021). Within the disciplines of Future Studies and Possibility Studies, however, relatively little attention is paid to constructions of the future and imaginations of the Possible in past societies. If a historical perspective is taken at all, it often goes back only a few centuries in time, with a preference for studying the “science fiction” produced in the past few centuries. It seems

that a deep historical perspective is lacking altogether, something that Jack Goody (2007) has, in more general terms, characterised as “the theft of history,” the blinkered view of the past that tends to obscure contributions from other cultures and deeper pasts than Western-European modernity. There is thus too little attention for how, in the past itself, past, present, and future were calibrated in relation to each other – and how this might affect us today. This is problematic because the ability to move between “what is” and “what could be” has been shown to be an important constituent of human evolution and the human niche (Fuentes 2020). A deep history of the Possible is therefore needed to properly investigate the evolution of human imagination (Koukouti and Malafouris 2020, who characterise this as an anthropological approach). Such a historical perspective will underscore and make more explicit to what extent “engaging with the Possible” is a situated, embodied process distributed across brains, bodies and things (Barona and Malafouris 2021). This lemma, of course, only provides an initial step toward such an ambitious project.

The other main reason to argue for a deep history of the Possible is ontological, in that it focusses on future-oriented activities in past societies with their own specific worldviews, which produce and define specific conceptualizations of the future. However, *their future* may not be the same as *our past*. Our own specific ontology, our philosophy of existence, heavily influenced by Modernity, is thus put into perspective.

This is to say that a deep history of the Possible could help us to overcome teleological ideas of temporality as if *their future* (in the past) could only lead to *our past* and present (Simon 2018). *Their future*, in other words, might not be the same as how we reconstruct it now, from our own specific ontology, in terms of *our past*.

Imagining the Future in the Ancient World: Divination

Imagining the Possible and developing knowledge of the future often requires external input from specialists. In Antiquity this input was

actively looked for and applied. It is therefore not true, as general accounts sometimes maintain, that people in the ancient world would feel powerless and in the grip of an inescapable fate (rightly Beerden 2013, p. 195): instead, they actively managed their future and thus imagined the Possible. For Roman society in particular, Dennis Feeney (2007) has remarked (with reference to the highly developed social and technological organization of Roman time structures) that “Roman time” was highly sophisticated and, in fact, less different from our “modern time” than often thought. We argue that the same is true for strategies of imagining the Possible in Antiquity.

Divination, the acknowledgement and semiotic interpretation of signs thought to have come from the supernatural, was probably the most important of these strategies and pervaded daily life in the ancient world (Sluiter 1997, pp. 163–168). Based on the idea of a particular connection between past, present and future, divination served to manage uncertainty and to imagine the future (Beerden 2013). In the Greek world, the practice of divination mainly consisted of oracular pronouncements about the future through the interpretation of the flight of birds, sacrifices, dreams or omens (Bremmer 2006). In a Roman context, divination was institutionalised and developed into “the science of future events” (*scientia rerum futurarum*), or at least that is how Cicero defines it in his book on the subject entitled *De Divinatione* (On Divination) (1,1). The Romans expected seer specialists like the *augur* (a birdwatcher) or the *haruspex* (a seer specialised in inspecting the entrails of a sacrificial animal) to be able to extract precise information about possibilities in the future (Briquel 2006).

Imagining the Longer-Term Future

The temporal range of divination as a practice seems to have been rather limited: stretching from the recent past to the (very) near future (Beerden 2013, p. 187). However, there certainly were forms of imagining the extended and unlimited future (for the question of the existence of the idea of Utopia in Antiquity, that we will not deal

with here, see Elsner 2021). The first way of doing so may be called analogical in the sense that experiences from the past were understood as something of a precedent for the (long-term) future. This is what the orator Lysias (around 400 BCE) expresses when he states (*Oration* 25, section 23): “you ought therefore, gentlemen, to take the events of the past as your example in resolving on the future course of things.” The kind of analogical thinking involved in this process is an example of “anchoring innovation” (Sluiter 2017; see “Lemma Anchoring”). A second example of imagining the longer-term future comes from literature and revolves around memory: it concerns the anticipation, by literary authors, of how future generations would remember them and their subjects. This way of thinking about the Possible and the future is to be found from our oldest poem, Homer’s *Iliad*. Homeric heroes greatly valued their *kleos*, their reputation as it was laid down in epic poetry that would be sung forever (Nagy 1979; Segal 1994). In fact, the memory of future generations would guarantee their “immortality.” A hero like Hector hopes – and thereby anticipates the possibility – that future generations will say of his young son: “he is even better than his father” (*Iliad* 6.475–481). He also proposes, in preparing for a duel with a Greek hero, that if he wins, he will return the body of his opponent to the Greeks for burial and imagines the effect on future generations: “One day, someone will say, one of the people coming after us [. . .]: ‘There is the grave of a man who died long ago, an excellent man whom the radiant Hector killed.’ So they will say one day, and my fame will never die” (*Iliad* 7.87–91). In general, ancient authors have a strong sense of the future survival of their work. Thucydides (fifth to fourth century BCE) calls his *History* a “possession for all times” (*ktêma es aei*, *Histories* 1.22); the Roman poet Horace (first century BCE), in speaking of the poem in which he commemorates a Roman politician, claims to have erected a monument “more durable than bronze” (*exegi monumentum aere perennius*, *Odes* 3.30.1) and adds “Not all of me will die” (*non omnis moriar*, *Odes* 3.30.6). The ancient future, therefore, was “open-but-not-empty” (Beerden 2013, p. 222; for teleological

historical narratives as a means to get control over (future) time, see Grethlein 2013).

Fate, Predestination, Free Will

Future-orientedness is also connected with concepts like fate, predestination, and free will, as they function in the ancient world. What do these notions, mainly debated within philosophy at the time, tell us about ancient ideas about the Possible? Already in Homer there is a multitude of names (*aisa*, *moira*, *nemesis*) for the power of fate. These are not seen as personal deities but rather as concepts to explain inescapable events (Frede 2006a). In Latin, the main term for this is *fatum*, the root of the modern English word fate. Antiquity had various theories concerning the issue of predestination, which is the conflict between the omnipotence of the divine – and thus the predetermination of the future – and individual free will. Stoicism posits the idea of a divine *logos* as the foundation of the *kosmos* with time becoming a causal chain. Platonism changes this by maintaining that we live *within* fate but not *by* fate (Graf and Drecoll 2006). Ideas on free will were therefore ambiguous and in fact often part of philosophical debates on the conflict between rational reflection, on the one hand, and non-rational desire on the other (Frede 2006b). In Greek, there is no concept of free will as an autonomous mental readiness to act, although the notion of *prohairesis* “choice,” comes close. The Latin *voluntas* seems to move even more in that direction. Be that as it may, it was not possible for anyone in Antiquity to imagine a motto like that accompanying Zack Snyder’s 2021 (uncut) movie-series *Justice League*, which seems characteristic of our twentieth/twenty-first century modernity: “Make your own future. Make your own past. It’s all right now” (https://www.youtube.com/watch?v=yZXRN_BINa4).

In an article provocatively entitled *Did the Romans have a future?*, Brent D. Shaw (2019) argued that “the Roman future” was much more limited and less complex than our modern imagination. The Romans certainly had ideas about future action however. Perceptions of storage

and its techniques – which were rapidly changing in the Roman era because they, quite literally, enabled a lot more future possibilities – are an illustrative example (Van Oyen 2020). However, Shaw (2019, p. 7) states, there is “nothing that can be identified as constructing the coherent interlinked thing that we call ‘the future’.” Acknowledging the coherence, complexity and extensiveness of Roman future-thinking in relation to other (historical) examples – “although still without *the* future of modernity” (Shaw 2019, p. 22) – he, in fact, reaches the same conclusion as Feeney did when investigating “Roman time” (see above): it was highly sophisticated and, in fact, less different from our “modern future” than often thought (now also Price and Berthelot 2020 with many examples).

The Possible, Imagination and Globalization in Antiquity

The reason why “Classical Antiquity” represents an important threshold in the evolution of human imagination and a deep history of the Possible is that the horizon of the Possible was expanded to include the whole known world during this period. Thus, the increasing connectivity (Globalization) that characterised Antiquity led to new forms of imagination in social life and resulted in the emergence of cosmopolitanism. As far as we can tell, this may have been the first time in human history that this happened in this particular form (Pradeau 2015; Stuurman 2017). Globalization, which can be defined as complex connectivity leading to time-space compression, is not only characteristic of Modernity but has a deep history and proliferated during the period of 500 BCE–500 CE (Pitts and Versluys 2015; Versluys 2022a). There is, moreover, a strong link between imagination and Globalization. Indeed, as Arjun Appadurai (2001, p. 14) states, Globalization “(–) is marked by a new role for the imagination in social life.” While the cultural nature of human experience and social life is not contested, recent research in sociocultural psychology shows that imagination is a situated, embodied process (Koukouti and Malafouris

2020; Zittoun et al. 2020). The question then arises what we can say about imagination as a situated process in Antiquity, focussing on its relation to Globalization, and how this impacted ideas on the Possible.

Differences between the Self and Other are at the very heart of the Possible, as it is the Other that allows the Self to imagine other possibilities. It is only through the Other that the Self is able to acquire new perspectives, that is: the different kinds of relations that we establish with the world in order to act within and in reaction to that world. As Vlad Glăveanu (2021, 20) put it: “(–) difference is the ontological root of the Possible as there would be no sense of possibility in an undifferentiated universe. In particular the differentiation between Self and Other opens up multiple ways of seeing things and of being in the world.” This was illustrated as early as 1744 by Giambattista Vico in his famous *Scienza Nuova*. Vico has human evolution on earth begin with giants, the first inhabitants of the earth, who live in the woods, underneath the trees, and are therefore unaware of the existence of the heavens. When lightning strikes, an open space in the canopy is created: a *lucus* according to Vico, which tellingly means both “a place where the light comes in” as well as “eye”. This changes the history of the giants fundamentally. They are no longer alone: they themselves now see the sky and, for the first time, can imagine a different world. It is only through a confrontation with the heavens, therefore, that the giants are able to see themselves and imagine a novel future; they soon start cutting the trees around them, building the first huts, then whole villages, etc. The redefinition of Self (earth) through Other (heavens) by imagining a different relation to the world is what puts history in motion, according to Vico (for this example and its interpretation we follow Safranski 2003). It is in this sense that novelty is bound to emerge when different perspectives are brought into dialogue: the Possible resides in the encounter (Glăveanu 2021, 4). The Other, therefore, is an action-orientation (so already Kristeva 1991). To manage this dialogical encounter, processes of “anchoring” are fundamental (Sluiter 2017; see section ► “Anchoring”).

Imagination prompted by outside perspectives, therefore, is at the very heart of human social life. It is subsequently developed and becomes more complex through time (Zittoun and Glăveanu 2018). The first *lucus* of the Giants, so to speak, would almost automatically be followed by many more “eyes” that enabled them to see and develop ever different perspectives on being within the world. This is how imagination leads human development. A robust imagination would have been a cultural asset, and indeed people invested heavily in it, through the development of (information-rich) communication systems and the manipulation of extra-somatic ecologies and materials “in order to imagine.” The period of Antiquity represents an important phase as part of the trajectory of the growing complexity of imagination practices and devices because of the fact that there were now more Others and more other perspectives available than (ever) before. Let us very briefly characterise some of the major developments for our period.

Although human history is characterised by connectivity from its earliest beginnings, the period around 1500 BCE witnesses a major proliferation of networks and systems of connections all across Afro-Eurasia (Versluys 2022a). The direct linkage between and among regions now became so frequent that many scholars consider the middle of the second millennium BCE to be the starting point of ancient Globalization (Sherratt 2017). In this period, imagination was probably mainly triggered by things that were introduced from the outside, because objects travelled more widely and in greater quantities than people did. In terms of the situatedness of imagination (Koukouti and Malafouris 2020) this is a clear example, then, of its material dimension (see Pitts and Versluys 2021 for objectscales). The circulation of goods characteristic of the Bronze Age is followed by an ever more intense circulation of goods and people in the Iron Age, from roughly about 1000 BCE onwards. People now established permanent and culturally distinct settlements in ever more distant regions. This first led to pressures always coming with increasing diversity (Fuentes 2020) but ultimately to the emergence of break-through novelties like writing, urbanism and imperialism (Hodos 2020).

Through cross-cultural comparison imagination became both more diverse and robust. Around the middle of the first millennium BCE, a decisive breakthrough in Self-Other relations materializes in the Persian (Achaemenid) Empire. This is the first political entity in world history claiming that it is universal. Comparative history projects, like those by Herodotus, are part of this emergence of a global consciousness (Versluys 2022b). The appearance of the (radical) idea of cosmopolitanism around 500 BCE is a defining moment in the deep history of the Possible. People could now, for the first time in world history as far as we can tell, imagine themselves as belonging to an *oikoumenê*, the inhabited world pictured as a unified whole and in terms of some sort of transcultural equality. This made many (new) things possible and would ultimately result in the Universal Declaration of Human Rights (so Stuurman 2017). During the Hellenistic and Roman periods connectivity all across Afro-Eurasia is yet further increased which, in terms of imagination, leads toward something of a global cultural horizon in the period around 200 BCE (Versluys 2022b). More (intense) Globalization results in more (intense) Self-Other dynamics which give rise to more (intense) possibilities residing in all these encounters: this is how imagination is the motor of human development. In fact, this might be the real reason for the success of the emerging Roman Empire (or “la raison de Rome,” after Moatti 1997) or the emergence of the Han Empire in China: at the core of both was the (chronological and/or geographical) Other as action-orientation (Versluys 2022b). Objects continue to play an important role with that process (Pitts and Versluys 2021). As a result, Romans from the Republic and Empire are able to imagine a Greek past for their own culture while it was even possible for a Roman emperor to picture himself as an Egyptian pharaoh (Versluys 2017). In terms of Self-Other dynamics, this stretches the Possible to the extreme.

Conclusion

We conclude that the cosmopolitan imagination from Antiquity, to the extent that it was there, is a

situated process of the Globalization of peoples and things. This is not how we usually see our (“Classical”) past, but this relationship with the Possible may have been part of a conscious vision of the present and future of people from the ancient world. Some scholars now argue that it might even play a role for our own future (see Delanty 2006 on the cosmological imagination; as well as Latour 2021 when calling for a new form of universalism).

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Apperception

Laura Røgild-Müller¹ and Jaan Valsiner²

¹IBEF Scholar and Centre of Cultural Psychology, Aalborg University, Aalborg, Denmark

²Aalborg University, Aalborg, Denmark

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Apperception is central for the dynamics of moving on from sensory experience to thinking. As his cornerstone in educational psychology, Johann

Friedrich Herbart (1746–1831) formed the theory of apperception, with the function of presentations (*Vorstellungen*) as central for the understanding of the function of thoughts and the human mind. It is a concept that was crucial in philosophy and psychology, but since the 1930s its theoretical use has curiously vanished from psychology.¹

In most general terms, apperception was defined at its widest use times late nineteenth century as “*the process by which a mental system appropriates a new element, or otherwise receives a fresh determination*” (Stout 1896, p. 112). The focus on the notions of *system*, *appropriation*, and *fresh determination* is crucial here. The systemic look at the mental processes (which we nowadays call cognitive functions) was a crucial need for psychology at the time where the human psyche was found to be consisting of a very large number of mental elements. These elements joined together into particular structures, the systemic function of which was the main target for psychology’s target of investigation. The reduction of this focus to behavior and its modification by learning eliminated the structural systemic focus for a century. Secondly, the centrality of bringing in material from the environment and linking it with the previous structures antedates the focus on open systems that Ludwig von Bertalanffy introduced in the twentieth century. The bonding of new material to existing structures was central in Jean Piaget’s assimilation-

accommodation theory and found its place also in the various versions of sociocultural appropriation theories that emerged by the end of the twentieth century. Finally, the reference to fresh determination indicates alertness to the synthesis of novelty by the functioning psychological system that brings the nineteenth-century apperception perspectives close to twentieth century’s developmental science.

In personal phenomenology – the way in which we take in whatever we meet in our surroundings and in feelings and thoughts is crucial for the way we can interact with and feel into the world. It is not surprising that this focus emerged as relevant in the first centuries of emerging psychology (Klempe 2020).

Historical Overview

The notion of *apperception* comes from the work of Rene Descartes (1596–1650)² and Gottfried Wilhelm Leibniz (1646–1716) before Herbart and was further developed by Theodor Lipps (1851–1914), Wilhelm Wundt (1832–1920), and others (Jahoda 2006; Stout 1889a, b, 1891, 1896) who followed the contributions by Herbart. Probably the most recent effort to bring it to the scientific practices is that of the Thematic *Apperception* Test developed in the 1930s by Henry Murray and Christina Morgan.

Apperception in Philosophy

After Descartes, elaboration of apperception occurred in Leibniz’s *Nouveaux Essais – Principes de la nature fondés en raison et de la grâce* (1690/1981), where in chapter 9 he introduced it as the way to denote *being aware* – the faculty of the soul to deal with ideas by way of reflecting on the perceptual processes (Pape 1997, p. 1). The notion was relevant to focus on how an object that is foreign (“not self”) enters into relation with the

¹ As an effort to find out its status we looked into psychology curricula in Denmark. For example, the term “apperception” does not appear within the curriculum of the psychology study at Aalborg University, neither as part of the bachelor’s or master’s degree. A curriculum encompassing cognitive psychology, developmental psychology, social psychology, personality psychology, and psychiatry among others (Berk 2013; Ewen 2014; Fraser and Burchell 2001; Hogg and Vaughan 2008; Inglis 2012; Karpatschhof and Katzenelson 2002; Matlin 2009; Simonsen and Møhl 2017). We do not believe that this is a lack solely present at the local university. It seems it is a tendency across the scholarly field of psychology in general, where this notion which for roughly 100 years ago with good reason was very discussed but over past decades has not been present. Partly that can be due to the unfocusing by psychology on sensations as elements of experience and working at the more integrative level of perception instead.

² As he used the word *apercevoir* in his book *Traité des passions*.

self. It was developed in opposition to John Locke's British empiricist beloved locus on *tabula rasa* and the associationistic buildups on that (Capesius 1894). Apperception is distinctively a Continental European concept. Immanuel Kant differentiated transcendental and empirical forms of apperception. The first entails "pure" unchangeable consciousness that is the basis for all experience. The latter the ways in which the actual self changes itself.

Johann Friedrich Herbart as the Key Author in Understanding Apperception

It is in the beginning of the nineteenth century that the notion of apperception found its focus of attention in the emerging psychology. Johann Friedrich Herbart played a central role in this emerging psychology – being the initiator of social psychology (Jahoda 2006) as well as introducing the first university lecture course in 1806 in Göttingen. His role in mathematization of psychology has been well known in history of psychology.

The key starting point for Herbart's look at apperception is his focus on presentational mass (*Vorstellungsmass*) that becomes organized by the apperception system. In terms of George Stout,

Apperception is the process by which a presentation-mass assimilates relatively unstable groups, fusing with homogeneous, and repressing antagonistic, elements. The new material assimilated may be either given in sensation, or reproduced by the internal working of the psychological mechanism. In the former case the process is called outer apperception; in the latter it is called inner apperception. (Stout 1888, p. 484)

This role of selection between sensations – inner or outer – attributed to apperception situates the concept as closely linked with the whole field of human sensations – the elementary units of the psyche as these were investigated in the nineteenth century. Once the focus moved away from the study of sensations into that of perception and action in the twentieth century – and away from synthesis focus – the notion of apperception lost its place.

The contrast between inner and outer apperception was important for Herbart:

In outer apperception the sense-affection is produced before it is apperceived. At the outset it possesses more unarrested intensity than is compatible with the conditions of equilibrium. Hence it has an initial advantage in the conflict with pre-existing contrary presentations, so that it causes them to sink towards the mechanical threshold, or even below it. At the same time, by immediate reproduction, it recalls or raises to fuller distinctness presentations which resemble it. These emerge slowly at first, but with gradually increasing rapidity. (Stout 1889b, p 366, added emphases)

The primacy of affect in outer apperception fits the needs for adaptation to incoming challenges – flexibility in relating to the stimulus. This is the location where innovation to the reaction – based on the form of the apperception – is being established.

Herbart's perspective on apperception was elaborated in chapter 5 of his classic *Psychology as Science* (Herbart 1825). As we can see from Fig. 1, Herbart saw the notion of apperception relevant in all four domains of the psyche: experiencing, acting, wanting, and willing. All these domains are coordinated by the personal come – *Das Ich*. It provided an interesting epistemological problem for Herbart.

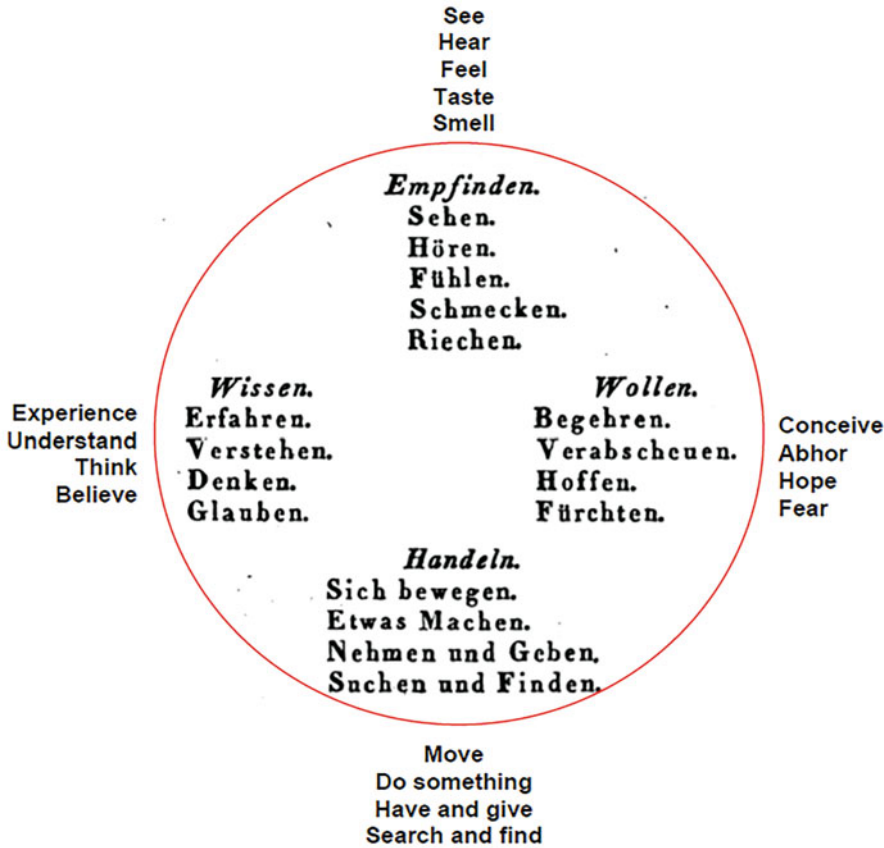
Looking for the Center: The "I" Cannot Be Found

Ich ("I") is the hypothetical and no more reachable starting point for the apperceptive processes. In Herbart's own words,

The I is a point which is and can only be presented in so far as innumerable rows point back to it, as their common law in advance.³

This can be to be the bridge between transcendental (not reachable) and empirical sides of the apperception (following Kant). The initial point (I) is assumed in backward projection of various

³In the original "*Das Ich ist ein Punkt, der nur in so fern vorgestellt wird und werden kann, als unzählige Reihen auf ihn, als ihr gemeinsames Vorausgesetz, zurückweisen*" (Herbart 1825, p. 251).



Apperception, Fig. 1 Herbart's categories of inner apperception (Herbart 1825, p. 251)

trajectories known empirically in the present as moving to the future and can be extrapolated to the past (Fig. 2), yet can never be directly proven. The unreachability of the past I point is proven by irreversible time – which was not emphasized in European philosophy until 1890s when Henri Bergson made it into the central parameter of his philosophy.

Theodor Lipps: Apperception and *Einfühlung*

Theodor Lipps would have been the main thinker of phenomenology in the twentieth century had not the shadow of Edmund Husserl captured the field. His systematic analysis of aesthetics (Lipps 1903) and architecture (Valsiner 2018) would provide a missing link to contemporary psychology

that has overemphasized language and narration over silence and basic aesthetic forms that have longevity over centuries.

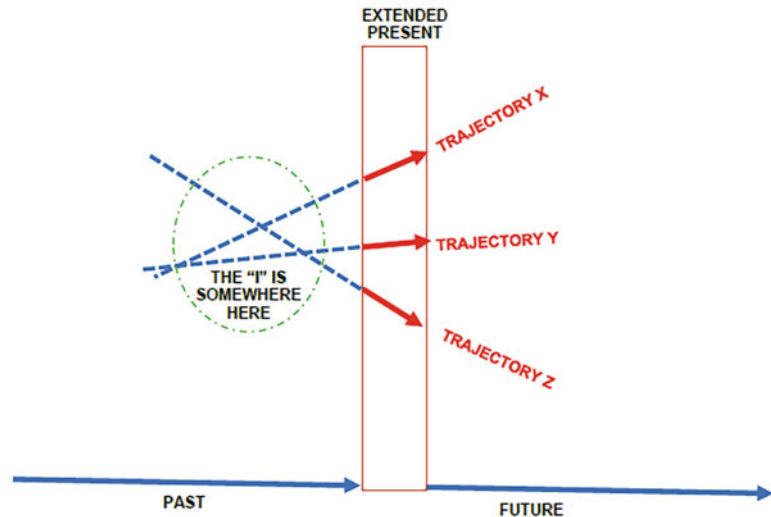
In his book *Vom Fühlen, Wollen und Denken* Lipps (1902) unified the notion of *Einfühlung*⁴ with apperception and the *Gegenstandstheorie*⁵ of his time. The crucial specific issue is the perception of the nonperceivable beyond its control

⁴Which is the process of feeling-in an object, and through that feeling – feeling further forward within the self. I look at flowers in a vase and feel “this is so beautiful” – and by such relating I guide forward my aesthetic feeling into the rest of the world, creating beauty on next occasions looking at flowers. A bee collecting nectar from the same flowers would not develop the feeling of beauty.

⁵Developed in late nineteenth century by the Graz School of Alexius Meinong. The basic notion of a *Gegenstand* entails a directional vector oriented toward some border that is maintained by a counter-vector: $\rightarrow \parallel \leftarrow$.

Apperception,

Fig. 2 Back projection of trajectories of apperception to locate the “I”



ends. The person looks at the sea horizon and imagines what might be beyond that horizon. Of course the imagination is dependent on what *is* perceivable – and unified by the act of apperception. It is the general apperceptive feeling-in (*allgemeine apperzeptive Einfühlung* – Lipps 1903, p. 241) that leads the person to attempt to move beyond the marked ending of the object. Feeling into the environment is based on the apperception of the possible continuity of the form beyond the perceivable.

Wilhelm Wundt: The Subjective-Objective Contrast

Similar example of the centrality of the process of apperception is brought forward by William Wundt as our understanding of words is going through the process of apperception to become meaningful constructs rather than mere sounds, and that we use such function constantly in our verbal lives (Wundt 1912).

The issue of apperception was crucial for Wundt from the very beginning of his work (Wundt 1862) to the very ripe period of his work at the end of his life (Wundt 1912). In continuity with the ideas of Herbart and the Herbartian disciples of early *Völkerpsychologie* (Moritz Lazarus and Chaim Steinthal – Volkelt 1924), Wundt

borrowed the notion of multiple flow of presentations (*Vorstellungen*) that are built on the experience of the total flow of the elementary units of the psyche – sensations. The experience of sensations goes through the passive>active and subjective>objective sieve – where the rational (cognitive) and subjective (affective) contrast was exemplified by the latter. The feelings that are triggered by sensations – some becoming extinct together with the sensation while others retaining the affective impact of sensations over time (“feeling tone” – Hollands 1906, p. 208). Within this domain of lingering feeling tones the apperceptive processes establish their further mastery of turning the feelings into ideas, images, words, and – eventually – generalized concepts (Wundt 1893, p. 37 on *apperceptive synthesis*) as well as feeding into volition. The notion of abstractive synthesis in the human mind is made possible by the mechanisms of Gestalt building by apperception. That process is also the link between the elementaristic experimental psychology of Wundt’s laboratory in Leipzig where the investigation of self-perception (*Selbstwahrnehmung*) was strictly separated from the study of higher psychological functions that Wundt’s *Völkerpsychologie* in the first two decades of the twentieth century depicted. In both – elementaristic and higher mental functions analyses – the synthesis was to occur from

elements upward toward structured complexes (of perception or myth). Gestalts were assembled from elements – and apperception with its starting point in the affective flow was the means to that end.

New Look at Apperception: Anticipating the Future as Arriving in the Present

The focus on apperception has been disregarded within modern psychology. But apperception as a function of the individual's perceiving in irreversible time accounting for the role of imagination within the human psyche is a central part of the way human beings experience in everyday life inseparably with social constructs.

Our everyday lives give us ample evidence about the central role of apperception. A relevant example of how action of apperception is present in moments of ordinary uncertainty can be taken from living in a time of the COVID-19 pandemic.

As X is standing in line in the narrow aisle of the grocery store a stranger walk down this narrow aisle against the flow of everyone in line and the arrows on the ground. The stranger is not coughing or in other was showing visible signs of being ill, but X feels scared of being infected with the coronavirus by the stranger.

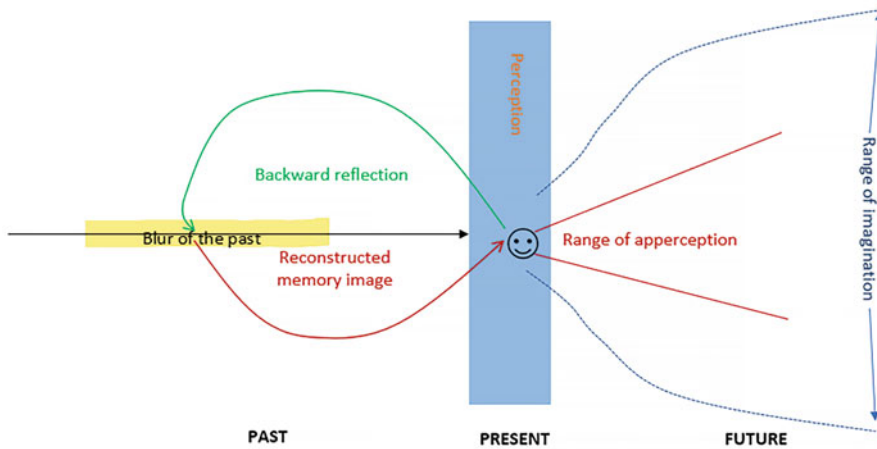
In the example X does not know whether the stranger is a carrier of the coronavirus or not, and the feeling of fear does not emerge solely as X perceives that a stranger is walking past. The fear emerges due to apperception, which is linked with the function of imagination. The imaginary understanding of the stranger as having the coronavirus which *of course* will be transferred to X by the stranger passing, maybe the stranger will cough that instant or simply by the look. Because of this imaginary idea of the stranger X now apperceives the stranger as a danger. It is therefore not from merely perception of the surroundings that creates X's experience in that present moment, it is the social construction and imagination of X's which affect how X is feeling. X is not afraid of the stranger standing behind in line, mind you if this person is not overstepping the marked "safety-box" on the floor, but that

another stranger is going against the (new) social norms can lead to an emergence of a feeling of great turmoil.⁶ The internal reality of X's is not simply the mere perception of what is in the world at the given moment in time, but it is an understanding that is connected with the irreversibility of time, as the imagination which is future oriented influences the current moment, which is the act of apperception. This is as well illustrated by the mental activity of the chess players,

A chess-player need not in actual play think about the general laws of the game or about general maxims derived from previous experience. It is much nearer the truth to say that he thinks by means of such laws or maxims than that he thinks about them. His insight into the dangers and advantages of a particular position, the particular move which suggests itself to him at any moment, his prevision of the line of play which is likely to be adopted by his adversary, are all due to the operation of an apperceptive system which has become organised in the course of previous experience. This system is the unity in which are combined the blended products of many particular experiences. It is therefore a universal. But its universality is exhibited only in the general plan of synthesis by which particular objects of attention are interconnected so as to form an intuitional whole. (Stout 1891, p. 193)

What becomes central in the use of apperception is its role in educating the *generalized intuition* – feeling into the knowledge domain (be it chess or any other domain of experience) so that the person preemptively can make decisions in ways that are not clearly calculated. They cannot be – since the irreversible time proves the adequacy of Herbert Simon's view of *satisficing* being adequate in settings where conditions are constantly changing. *Optimizing* – the favorite mantra of economists and administrators – is simply not possible in the human mind. Figure 3 illustrates a new location for apperception in the future-oriented thinking schemes.

⁶We do wish to note that we certainly respect the health concerns of the current situation we are in, as well as respect others' precautions due to diverse physical and mental health issues. Here we simply wish to show how the phenomenon of apperception is rippling through our everyday lives.



Apperception, Fig. 3 New model of apperception in the context of irreversible time

Figure 3 illustrates apperception as a process in the span of irreversible time. A process which exist within the present moment, as any function in life, intertwined with the reconstructed memory of the blur of the past. The blur of the past resembles a hotchpotch of past experiences, which never can be experienced exactly as they were experienced and often will be affected by other past experiences. And furthermore, intertwined with the imagination of the possible future. All a collected process affecting the way in which the individual understands the experiences inside and outside of the self.

The Basis for Apperception: Anticipation

Anticipation – expectation of something that might happen – characterizes all forms of life. In the flow of ongoing living any adaptive action only is possible on the basis of anticipation (Toomela 2015), and it is relevant to study within a wide variety of perspectives ranging from neuroscience to philosophy, economics, and psychology to name a few. The extent to which it has been studied is only a small field of contemporary research. Therefor the scholarly insight into the phenomenon of anticipation is limited. The research on the phenomenon of anticipation is mostly based on cognitive and neuroscience and

grows out of work from over the entire past century, and recently has the insight from classic scholars in physiology and organization of goals-directed movements (Bernstein 1940) who were the essential pioneers within the field of study of anticipatory processes (Nadin 2015; Poli 2017).

The notion of anticipation is used in different ways, as a lay term it refers to future-oriented experiences and set in line with forecasting, predication, expectation, and prospection, which scholarly has been pronounced insufficient in that the phenomenon of anticipation exceeds any reduction to psychology, physiology, or any other field, as it ranges over a wide spectrum (Nadin 2015). Within the scholarly field of studying anticipation there exist divergence in regard to definition of the phenomenon of anticipation, and many central elements such as how it occurs and which types of anticipation can be distinguished still hold uncertainty (Nadin 2015; Poli 2017). Studies have however shown how diverse forms of anticipation exist and how it is relevant to distinguish biotic and psychic forms of anticipation (Toomela 2015). As in other domains the difference between biotic and psychic forms are on fundamental levels diverse. To set it up rather harshly is biotic anticipation for the sake of the species (with slowly

emerging novel forms of anticipation for adaptation for the survival of the species not necessarily the individual) and psychic anticipation is for the individual's well-being and function in life (highly linked with the individual's sense-making processes and ability to function, which also consist of learning how to predict the future) (Toomela 2015). Studies of anticipation are mainly from cognitive and neuroscience perspectives, which is not transmittable and sufficient for comprehending subjective experiences of psychic anticipation (as could emerge in silent experiences), which always will remain new for every emergence. As mentioned above did Lehmann et al. (2018) show a connection between experiences of surprising silences and feelings of anticipation as a tension between expectations and reality.

Interestingly anticipation is linked with events that are about to happen. It is not present within a state of silence. In that state anticipation vanishes – even if for very short moments. These as the phenomena of silences and silence are, though at times linkable, two completely diverse phenomena (Røgild-Müller 2020). The phenomenon of silence is that of complete presence – experiencing the silence in its fullness.

Summary: Bringing a Forgotten Concept Forward to New Life

What is the value of history in psychology? Very often we hear dismissive voices about history of a science – it is a storehouse of failed ideas that have proven wrong in the constant progress of science. Nothing can be more far from reality where different ideas about the subject matter in a given discipline go through nonlinear developmental trajectories. For long times these ideas may be ignored, at times discovered as if a completely new and fashionable way of thinking (e.g., cognitive science being built on the mental psychology of early twentieth century but not recognizing that continuity) – only to give way to another fashion. Fashions do not create new knowledge but merely redress the previous realm of our understanding.

Our effort in this entry was precisely the opposite – to bring back a particular lost concept and situate it in our current science of cultural psychology. What we have done in this small overview of an old but forgotten concept is to bring it from the oblivion of collective forgetting to a new life. The new focus – especially in cultural psychology of semiotic mediation – on the centrality of irreversible time in human psychological functions gives apperception a renewed relevance in the relating with the environment. In every psychological process oriented toward the immediate future there is uncertainty about that future necessarily involved. That uncertainty is overcome by structuring the anticipatory act to face the possible future – by structure of apperceptive kind. It is here where the affective primacy of the human adapting mind is located.

A very fitting example of where the notion of apperception is necessarily in the center of the specific cognitive functions is Gerd Gigerenzer's theory of fast and frugal heuristics. Gigerenzer (summary in Gigerenzer et al. 1999) proved that in the actual decision making in ordinary circumstances the time pressures do not allow the decision maker to calculate all the versions of possible actions and their costs and benefits, not to gather full information about all the context. The decisions are made on intuitive basis – quickly (fast) and robustly (frugal) – and turn out to be sufficiently adequate. Yet the mechanisms of such rapidly functioning processes needed further clarification. Gigerenzer imported evolutionary psychology to support the adaptability of such fast and frugal mechanisms. While reference to evolutionary pressures may explain the need for emergence of such rapid cognitive tools, how the fast and frugal process works remains a mystery. No classical experimental design – oriented to the outcomes of the heuristic use – can explain the ways in which the rapid processes proceed. Apperception is a likely candidate to explaining this. This can be observed in the historical background of the heuristics idea that goes back to the work of Otto Selz in the beginning of the twentieth century and its role in looking on decision processes beyond the notion of logical computations (Wettersten 2017). The general aboutness of

the heuristics is the arena for apperception to work toward synthesis of decisions.

Scientific concepts are like musical instruments – needed in coordinated fashion to play various pieces of music. Psychology has had very little stamina in teaching its theoretical concepts how to relate to one another to arrive a full understanding of the depth of the psychological phenomena. Instead, psychological theories operate like street musicians collecting alms for the limited coverage of the whole complexity of human lives as dramatic operas.

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Archetypes

Betty Sacco German

C.G. Jung Institut, Zurich, Switzerland

Webster University, Geneva, Switzerland

Abstract

The notion of archetype, although already present in Western culture since ancient Greece, is associated to the name of the Swiss psychiatrist Carl Gustav Jung (1875–1961), who gave the concept both a universal and a psychodynamic connotation. Universal, because archetypes are the contents of the collective unconscious, which is the common unconscious substratum that connects every human. Psychodynamic, since archetypes are patterns of behavior, i.e., they regulate human behavior according to inborn schemata similar to instincts. Jung formalized the double nature of the archetype in 1946 and differentiated between archetype as such and archetypal image, the former being a “psychoid” factor inaccessible to consciousness while the latter can reach consciousness in the form of universal symbols.

This distinction makes the archetype an agent of inner and outer change that links together biology, psychology, and culture. When consciousness is torn between opposites, an archetypal image emerges to bridge the split, thus promoting a new conscious attitude. In the role of union of opposites from which a third is born, the archetype becomes a holder of potential and a catalyst of creativity on both a personal and a collective level.

This entry defines the notion of archetype, outlines its history, and presents the Jungian model of the psyche, including the dynamic notion of the unconscious from which stems the potential of the archetype.

Keywords

Archetype · C.G. Jung · Collective unconscious · Complexes · Creativity · Individuation process · Inspiration · Shadow · Synchronicity · Transcendent function

Definition and Brief History of the Term

The notion of archetype has been in Western culture since ancient Greece, where the term *archetypos* conveyed the idea of an original form, a very first pattern. At its core, the word *arche*, which meant *principle* or *origin*, was used in Greek philosophy to indicate the primordial substance and, with Aristotle, the principle of knowledge. *Typos*, the other component of the word, meant *form* or *type* and carried the idea of an imprinting. Through its Latin translation *Archetypum*, the word was acquired to the Western languages in the meaning of original model or prototype. In this definition, the archetype can be conceived as an original form that organizes a variety of contents within the same structure, very much like the platonic forms.

The term remained confined to scholarly domains such as philosophy and theology until the beginning of the twentieth century, when the Swiss psychiatrist Carl Gustav Jung introduced it in the field of psychology for the first time in 1919 (Jacobi 1999). Jung named “*archetypes* of perception and apprehension” the “*a priori* inborn forms” of the collective unconscious, “which are the necessary *a priori* determinants of all psychic processes” (Jung 1919, CW8, para 270). In this definition, archetypes are the universal structures or patterns of behavior that regulate psychic processes on both an individual and a collective level.

Although borrowing the term from St. Augustine, Jung was inspired by the *Corpus Hermeticum*, which describes God as the archetypal light, i.e., “the prototype of all light” (Jung 1919, CW8; Jung 1938, CW9, I, para. 149). Along with the notion of prototype, which was influenced by the platonic theory of forms, medieval philosophy introduced the connection between the *a priori* forms and the human mind. More particularly, in Scholasticism “we find the notion that archetypes are natural images engraved on the human mind, helping it to form its judgments” (Jung 1919, CW8, para. 275).

This connection, which in Jung’s understanding is particularly relevant for psychology, was lost after the Scientific Revolution. The notion of archetype, then, gradually lost its metaphysical

connotation to become a mere “thought” in Spinoza, and a category of understanding in Kant (Jung 1919, CW8).

Once acquired to analytical psychology the term archetype became more commonly used while the Jungian theory gradually expanded to other fields, including art and literature, and, in recent times, organizational psychology and marketing.

C.G. Jung and the Archetypes

The elaboration of the theory of archetypes was for Jung a long endeavor that lasted over 30 years, from the first hypothesis in 1912 to the final theory in 1946. The reason was the complexity of the topic together with the difficulty to translate into theory his empirical observations, as psychology was a new science that lacked universal truths. Moreover, Jung’s circular and encyclopedic method of work required a lot of time: Jung would elaborate an initial concept, then amplify it through further readings in many fields other than psychiatry, and finally go back to the initial notion to perfect it (Shamdasani 2003).

In the Jungian model of the psyche archetypes are closely related to the collective unconscious, which is the deeper and universal layer of the unconscious common to all individuals. In contrast to the personal unconscious, the collective unconscious “does not derive from personal experience and is not a personal acquisition but is inborn”; it is “identical in all men and thus constitutes a common psychic substrate of a supra-personal nature which is present in every one of us.” Because the unconscious is alien to the conscious, we can only apprehend the unconscious through its contents that can emerge to consciousness. The contents of the collective unconscious are the archetypes while the feeling-toned complexes are the contents of the personal unconscious (Jung 1954a, CW9,1, para 3,4).

Jung laid the cornerstones of his theory as early as 1912 when he published *Wandlungen und Symbole der Libido*, the book that marked the split with Freud and that, in its later and revised English translation, was called *Symbols of*

Transformation (CW5). In the book, Jung frees the notion of libido from the Freudian identification with the sexual drive and gives it the broader sense of psychic energy, emphasizing the dynamic, symbolic, and transformative character of the libido in the human psyche. In Jung’s view, human beings are connected to the many historical and cultural layers made by their ancestors through “fantasy thinking,” i.e., the sort of thinking that shapes the symbolic language of dreams and myths (Jung 1912, CW5). He used the expression “primordial images” to indicate all the collective images and themes from myths, legends, and fairy tales that tend to form recurrent patterns throughout the world from immemorial time. The collective and inherited nature of the primordial images explains the fact that the same symbols found in legends and fairytales are also found in dreams and in the delusions of psychotic patients (Jacobi 1999; Jung 1917, CW7, para. 100–101).

The theoretical developments that Jung published in 1912 were the result of several years of research and practice at the Burghölzli, the psychiatric university hospital in Zurich where Jung worked from 1900 to 1909 under Bleuler’s supervision. The observations of schizophrenics and their delusions contributed to the idea of a deeper, objective, and collective layer of the unconscious whose contents were symbolic images recurrent in many different cultures throughout the world.

In this regard, Jung mentions an episode that occurred in 1906. He came across a vision in a paranoid schizophrenic that had as a central image the penis of the sun which was generating the wind. Four years later, Jung read about a Mithraic ritual that presented a similar theme of a wind tube connected to the sun god. Knowing that the patient, who was a simple man and had been interned for many years, had no awareness of the existence of the Mithraic myth, Jung came to the conclusion that both the theme of the delusion and the one of the Mithraic ritual were “representations collectives” (Jung 1936, CW9.I, para. 105–106). Similar representations seemed to surface from dream analysis and active imagination, a technique created by Jung to reproduce a dream-like state in which unconscious contents emerge

to consciousness. All these findings seemed to point to the existence of universal and highly symbolic themes or images, such as, for example, the opposition between light and dark, the union of the opposites in a third, and abstract geometrical figures.

As for the archetypes, Jung first called them *primordial images*, then *dominants* of the collective unconscious, and finally in 1919 he introduced the term *archetype* to signify a mode of apprehension correlated to the instinct (*Instinkt*). While the instinct produces the immediate behavior, the archetype offers the intelligible image behind the behavior (Jung 1917, CW7; Jacobi 1999; Jung 1919, CW8).

The connection between archetypes and instincts is an attempt to clarify the dual nature of the archetype, which is both instinct and image, spirit and matter. The composition of the paradox arrives in 1946 when Jung differentiates between archetype as such and archetypal image. The former is a “psychoid factor,” *i.e.*, inaccessible to human consciousness, while the latter is an archetypal representation that is able to become conscious. Imagining the existence of a threshold under which the unconscious contents cannot reach consciousness, the archetype as such is below that threshold: Although organizing human behavior, it stays transcendent and can become conscious only through the archetypal image.

Archetypal images are highly symbolic and carry a strong power of attraction and transformation. During psychotherapy, the conscious integration of symbols from dreams, synchronicity, and active imagination brings a process of behavioral and psychological change that Jung called the individuation process, *i.e.*, the process of truly becoming oneself. In this way symbols, with their multilayered and captivating meaning, become the carriers of the transforming power that archetypes exert on the human psyche.

Symbolic Dynamics and Characteristics of the Archetypes

The compelling power of the archetype on the individual stems from its being a numinous factor

with a “*feeling-value*.” Numinosity, which is the quality of the divinity and the supernatural as experienced by humans, gives “*dynamism*” to the archetype and fascinating power to the archetypal image. Similar to an instinct, the archetype can be paradoxically experienced as “physiological dynamism” that comes to consciousness as “images or group of images,” which carry a strong feeling tone and have a numinous effect. These images exert a power of attraction and, through their integration to consciousness, induce change (Jung 1954b, CW8, para. 414).

The transformative power of the symbol is made possible by the fact that “psyche and matter are two different aspects of one and the same thing.” Due to its psychoid and symbolic nature, the archetype presents itself as a bridge between two worlds, the world of spirit and the world of matter; however, because both spirit and matter need to be mediated by the psyche in order to access human consciousness, Jung mainly talks of the archetypes in terms of psychic phenomena (Jung 1954b, CW8, para. 418).

The connection between psyche and matter can be seen in the phenomenon of synchronicity, which is a meaningful coincidence where a physical event seems to happen in correspondence to a psychic one, and mirror it. The two events are not regulated by causality but, rather, by “a falling together in time, a kind of simultaneity” (Jung 1952, CW8, para. 840).

An example of this correspondence is an episode that occurred to Jung during a session with a young woman. While she was describing an image from a dream of hers where she was given a golden scarab, in that very moment a scarab-like insect, a *Cetonia aurata*, knocked at the window pane, then entered the consulting room. The power and the meaningfulness of the experience is expressed in Jung’s comment: “I must admit that nothing like it ever happened to me before or since, and that the dream of the patient has remained unique in my experience” (Jung 1952, CW 8, para. 843).

This case points to the archetypal basis of synchronicity: the scarab as a symbol of rebirth and transformation came in a moment where the patient felt stuck and in need of a deep change.

The archetype, first constellated in the dream and then mirrored by the synchronistic event, appears to compensate for the one-sided rational attitude of the dreamer and provokes an essential change, *i.e.*, psychic renewal or rebirth. The numinosity and the feelings of awe elicited by the episode, which made a strong impact on both the patient and the therapist, confirm its archetypal nature, since the numinous effects of the archetype “express themselves as *affects*” (Jung 1952, CW8, para. 841).

Synchronicity is a good example of how the archetype organizes unconscious psychic processes: the archetypal image, which in synchronistic episodes is doubled by a correspondent objective event, catches consciousness, “sets it in motion,” and becomes conscious, thus organizing human behavior in a meaningful way correspondent to the symbol.

Contrary to the archetype as such, which Jung describes as *coincidentia oppositorum*, the archetypal image reaches consciousness in a multiplicity of facets organized around a positive and a negative pole. As an example, the Mother archetype, in its symbolic representation, includes a broad range of meanings that go from the nourishing aspects of the positive mother to the devouring sides of the negative one. In its positive aspects, the mother archetype is a vessel, a spiritual container, a shelter, and a life giver. It is abundant, accepting and all-nourishing, as symbolized in the breast and breastfeeding motif, and in figures such as Demeter, the virgin Mary, and the ancient goddesses of fertility. In its negative character the mother archetype becomes the “devouring womb of grave and death,” the Queen of the underworld who brings destruction, as symbolized in the goddess Kali and in monsters such as the Gorgons (Neumann 1983, p. 149). This same duality can be observed in real life where mothers can be both givers of life and perpetrators of infanticides, nourishing and destructive. The two poles can also cohabit in the same individual, man or woman, who can hold a nurturing attitude or a devouring one, depending on life situations.

Opposite to the duality of the archetypal images stays the centering effect of the archetype

through the symbol: When the ego is torn between opposites, the emergence of a symbol bridges them and creates a third way, which makes the symbol a mediator between conscious and unconscious.

Psychic processes are in their essence a phenomenon of energy that, like other forms of energy, proceeds from the tension of opposites. This is why the law of *enantiodromia*, for which “sooner or later everything runs into its opposite,” is for Jung “the most marvellous of all psychological laws” (Jung 1917, CW7, para. 34 and 111).

In other words, the psychic dynamic is an interplay of opposites striving for balance. When the psychic energy becomes one sided, a symbol appears to compensate the conscious attitude, thus allowing the libido, previously blocked into the unconscious, to flow again. An example of this dynamic is the case of synchronicity discussed above, where the scarab, as a symbol of transformation and rebirth, comes to compensate a conscious rigid attitude and the feeling of being stuck.

The potential of the archetype resides in the emergence of the symbol from the dynamic of the opposites, *i.e.*, the dynamic between conscious and unconscious whose divergent contents establish a relationship of reciprocal compensation. The symbol creates a dialogue between the two, as “both are aspects of life.” Psychic life can only unfold through the constant dialogue and open collaboration between conscious and unconscious, from which emerge new conscious attitudes. During the process of psychoanalysis, the repeated appearance of the transcendent function, *i.e.*, the bridging of the opposites through the symbol, enhances the individuation process, which is the “rounding out of the personality into a whole,” in a creative dynamic that establishes a contact with the centering principle of the whole personality and actualizes the individual potential (Jung 1939, CW 9,I, para. 522 and 224).

The Potential

We call the unconscious ‘nothing,’ and yet it is a reality *in potential*. The thought we shall think, the deed we shall do, even the fate we shall lament

tomorrow, all lie unconscious in our today. The unknown in us which the affect uncovers was always there and sooner or later would have presented itself to consciousness. (Jung 1939, CW 9,1, para. 498)

In the Jungian model of the psyche the potential stems, first and foremost, from the idea that the unconscious is not a mere container of repressed elements, but rather a vast, dynamic, and powerful force of nature that encompasses past, present, and future, and regulates, shapes, and even disrupts human life. Jungian psychotherapy has at its core the dialectic between conscious and unconscious, which continuously creates new synthesis and is a harbinger of future developments. However, the interaction between conscious and unconscious can result in both psychic conflict and growth. The conflict occurs whenever the conscious mind attempts to dominate or suppress the unconscious contents while psychic growth happens when the conscious establishes a dialogue with the unconscious.

In their quality of unconscious contents that can reach consciousness, the archetypes are the principal actors of the dialogue between conscious and unconscious where they guide the conscious attitude toward change and renewal. Patterns of behavior, they are life in a nutshell since they structure the reality that will unfold, and shape the meaningful moments in human existence.

For their closeness to instincts archetypes have a tangible impact in shaping human behavior throughout life. In our first years, we are guided by the *puer archetype*, while the *senex* accompanies our last years. The activation of the *syzygy* or conjunction leads us toward marriage while the mother and the father archetypes guide motherhood and fatherhood. Moreover, each archetype elicits its opposite, thus giving, for example, glimpses of wisdom to the child, and playfulness to the old wise man.

During therapy, the appearance of an archetype announces a creative process, which channels the paradoxical nature of the psyche toward the emergence of a third. As union of opposites, the archetypal image offers to consciousness the unknown side, which starts a process of transformation and

creation of new perspectives. Jung calls transcendent function the progressive development toward a new attitude, which “arises from the union of conscious and unconscious contents” and brings a sense of wholeness and reconciliation (Jung 1957, CW8, para. 131).

The transcendent function bridges the opposition between conscious and unconscious, and offers the opportunity of a new synthesis. Once the opposition is transcended, a new antithesis will appear in search for equilibrium. The synthesis will come again, in a nonlinear and metaphorical way through a new symbol. This ongoing process of psychic transformation is the expression of the purposefulness of the unconscious that guides us toward the goal of becoming who we really are. More than a static and permanent acquisition, the goal indicates a horizon while the path toward the horizon is the individuation process, which implies a broadening of consciousness through the confrontation with the unconscious, and a synthesis of the opposites through the emergence of the symbol.

The process of creating oneself, which proceeds from inner division toward inner wholeness, unfolds through the encounter with a number of archetypes, which appear in dreams and synchronistic events, and the integration of the feelings attached to them. Although the archetypal images vary according to the individual path, some of them are particularly meaningful, as they are consistently present during the individuation process. These are the *shadow* and the *persona*, the *wise old man*, the *child*, the *mother* and the *maiden*, the *anima* and the *animus*, and finally the *self*, which is the center of the whole personality, conscious and unconscious. The symbols of the self often represent the potential, such as the egg and the divine child, and the indestructible, such as the diamond and the stone; they can also show in abstract and geometrical shapes, such as the mandala (Jacobi 1999, p. 114).

The archetype of the self contains the potential for both centeredness and self-actualization. The mandala and the fourfold symbols refer to the stable, eternal, and structured nature of the psyche in its state of pure being; on the other

hand, the symbols of threefoldness represent the developmental process of becoming oneself. The self is, therefore, both being and becoming, in a combination that results paradoxical to human consciousness (Edinger 1972).

From the paradoxical nature of the archetypes stems the potential for change and creativity. In the individuation process, the turning into the opposite can be understood as an alternance of growth and contraction where negative symbols turn into positive one. As an example, a negative father complex will show in dreams as negative male figures that, once integrated to consciousness, will transform into positive father figures, thus modifying the actual negative experience of the father into a broader conscious perception that includes the positive aspects as well. However, the expansion enhanced by the broadening of consciousness could not happen without the sacrifice of old attitudes, which is the antidote to the inflation of the ego.

The alternance of growth and sacrifice, expansion and contraction, marks the rhythm of psychic life where to creation can follow destruction. In fact, the archetype's creativity can become destructiveness whenever the individual ego is incapable to differentiate between conscious and unconscious contents. In this case the ego identifies with the archetype thus losing contact with reality, as observed in schizophrenia. As a result, the negative pole of the archetype can become a haunting persecutor and display all its destructive power.

The destructiveness of the archetype can be experience on both an individual and a collective level. This is the case with the *shadow*, i.e., the dark side of personality that appears in dreams as the personification of unwanted aspects of ourselves. When unconscious, the shadow is easily projected onto others with negative feelings such as rejection and despise. On the other hand, the awareness of one's own shadow sides brings the sense of one's own imperfection and a feeling of humility. Moreover, the shadow presents the potential inherent to the rejected aspects of personality. As an example, for an extravert who despises introverts, the contact with the repressed

introversion will expand the range of personal expression and improve the relationship to oneself and to others.

On a collective level, the shadow is represented in figures of absolute evil, such as the devil, which can be projected onto an outgroup and result into conflict, violence, and even genocide. History offers many examples of this dynamic throughout the centuries and throughout the world, where a minority receives the projection of pure evil, thus becoming the object of moral exclusion and extermination. On the other side, the integration of the shadow on a collective level allows the inclusion to society of people and parts that appear to not conform to the mainstream, thus enriching the collective consciousness with new sides and possibilities.

Transforming one's own life is an act of creation, however not the only one. The potential of the archetypes also manifests in paintings, fairy tales, artifacts, novels, movies, and all those things and ideas that humans have created in different times and cultures of the world.

In his *Six Memos for the Next Millennium*, the Italian writer Italo Calvino supports the idea that the source of creativity is an unconscious image that appears to consciousness and inspires the creative work. Artists and writers do not know where the image comes from, as much of the source is unconscious (Calvino 1988). On the same line of thought was the physicist Wolfgang Pauli who was in analysis with Jung and collaborated with him on the concept of synchronicity. Pauli thought that creative ideas, including scientific theories, are born from the encounter between the outer reality and the archetypes (Pauli 1994).

Thus, in their role as organizers of human apprehension around a symbolic image, the archetypes can guide creative processes and regulate the communication between the individual creativity and the collective unconscious. Ancient Greeks symbolized the creative process in the nine Muses, to signify that inspiration comes from the beyond. However, Mnemosyne, goddess of memory and mother of the Muses, is a reminder that inspiration also has an historical color, since

every work of art carries the memory of what has preceded. As for the archetypes, they are a source of inspiration especially for their capacity to bridge matter with spirit, and history with the beyond.

To sum up, the potential of archetypes resides in their capacity to compensate and transform our conscious attitude, and to structure our life both on an individual and collective level. In times of change, the emergence of archetypal images puts us in contact with the other in us, thus bridging our inner conflicts with a creative solution, and helps us create new attitudes. Moreover, for their capacity to bridge spirit and matter and to access human consciousness through symbols, archetypes are the source of inspiration for artists, scientists, and other creators.

However, opposed to the constructive and creative cycle stays the destructive one that appears whenever the personal or collective ego identifies with the positive pole of the archetype, thus projecting the split negative part onto another individual or group.

Conclusion

Jung emphasized the fact that the psyche is composed of two halves, the conscious and the unconscious, that are opposite and difficult to harmonize. However, the relationship between these two halves is vital to our psychological well-being on both the individual and the collective level. In the encounter with the unconscious, and the opposition that goes with it, the archetypes have a crucial role to play in expanding human consciousness and in creating psychic life.

On the individual level, archetypes organize psychic growth through the individuation process and offer the experience of the unknown. Moreover, they structure the meaningful moments in human life and guide human beings through change. On a collective level, archetypes are the source of creativity and organize human apprehension, thus directly influencing collective trends. Similar to the collective unconscious of which is a part, the archetype is a force of nature, which can

be both constructive and destructive, depending on whether or not the conscious is capable to differentiate and open a dialogue with the unconscious.

The Jungian distinction between an instinctual and a symbolic part to the archetype has left room for debate. The definition of the archetype has a spectrum that goes from nature to culture where the connection between the two can give rise to different interpretations. In recent years, the debate on the nature of the archetype has proposed two main perspectives: on one side, the evolutionary model based on the identification between psyche and biology; on the other, a multidisciplinary model that, although not denying the importance of the biological element in the theory of the archetype, supports the differentiation between psychology and biology. Antony Stevens, a representative of the evolutionary model, considers archetypes as innate neuropsychic structures ingrained in the genetic structure, “which evolved by natural selection to accomplish certain specific goals.” Opposed to this view is George Hogenson who considers the archetypes as “the emergent properties of the dynamic developmental system of the brain, environment and narrative,” which have no location in the brain (Hogenson et al. 2003; Hogenson 2019).

Regardless of the perspective, the notion of archetype still dwells in the contemporary Western culture several decades after Jung’s death. Besides the world of analytical psychology, where the debate is still alive, the reference to archetypes permeates diverse areas of culture, which are not bond to psychology. These go from literature, where phantasy novels display characters that often embody archetypal images, to philosophy with Bachelard’s philosophy of imagination and his books on the four elements, and to marketing, where branding and advertising are built around an archetype in order to catch the customer’s interest through an unconscious and compelling message.

Although unorthodox, the use of archetypes in the field of marketing shows the extent to which Jung’s theory has influenced Western culture, way beyond the field of analytical psychology. In fact,

the success of the Jungian theory of archetypes can be ascribed precisely to its capacity to expand in other fields thanks to a model that encompasses biology, psychology, and culture.

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Arts Education

Edward P. Clapp¹ and Carolyn Kar Ning Ho²

¹Project Zero, Harvard Graduate School of Education, Cambridge, MA, USA

²Canadian International School of Hong Kong, Hong Kong, China

Abstract

Arts education may be loosely understood as teaching and learning in or through the arts within a variety of formal and informal environments including Pre–K–12 schools, colleges and universities, community organizations, libraries and museums, cultural centers, or within one’s home or community. This entry explores the historical background, definitions, multiple purposes, critical perspectives, and connections to the now and the possible for arts education.

Keywords

Arts · Education · Arts Education · Aesthetic Education

Historical Background

In the English language, “arte” is the root of the word *artefact* or *artifact*. Artifacts often represent objects created by human beings within a historical or cultural context. Artifacts displaying a sense of artistry have been found to exist within the most ancient cultures throughout the world. From this prehistorical perspective, art can be understood as a means for our human ancestors to communicate, to chronicle and make meaning of their experiences, and as a mechanism for survival. More than serve these utilitarian purposes, since early times the arts have been used to make *special* (Sweeney, 2013) – or in other words, to make everyday objects, practices, and processes more interesting, unique, or distinctive. A design carved into a stone tool that would have otherwise had a strictly utilitarian purpose has been *made special* by the presence of that added design. The same may be said of a prayer sung in a unique

melodic tone and pattern or a garment adorned with colored dyes, bones, feathers, and beads.

Teaching and learning in the arts – arts education – has existed for as long as the arts have been a part of the human experience. Arts education long served as a platform for the transferal of the skills in creating artifacts within a historic or cultural context. So as with the trades, the arts have historically been taught through an apprenticeship model. In Japan, for instance, calligraphy, pottery, weaving, and Zen practices have all been taught in the past – and present – through apprenticeship (Singleton, 1998). Apprenticeship continues to be a powerful form of arts teaching and learning in many cultures around the world. Well-renowned composers, dancers, musicians, and sculptors have mastered their craft under one or more experienced teachers. In some cases, apprenticeships are formal arrangements that have rigid structures, and in other cases, an apprenticeship in the arts may be significantly less formal, more casual, or even embedded into one's daily experiences as part of being a member of a community or a tribe.

Beyond apprenticeship, arts teaching and learning has been taught more formally through schools and other learning environments. Many Western histories of arts education identify the East Coast of the United States as a forerunner in the development of such practices. Beginning in the 1800s, interests began to emerge in the training of young people to develop technical drawing skills. Training the hand and the eye in the practice of technical drawing had industrial applications that supported young people as they prepared for careers in various Industrial Revolution-era professions. One of the earliest texts (in English) noted to support technical drawing was *An Introduction to Linear Drawing* by William Bentley Fowle (1825). Fowle's book was an adaptation from an earlier French text, which he had translated into English for use in American public schools. While the city of Philadelphia and other east coast locales have been noted as early adopters of technical drawing and other forms of arts-related education, beginning in the 1860s the Commonwealth of Massachusetts was the first US state to formally incorporate the arts into the

public school curriculum. Although a complete chronology of the history of arts education is beyond the scope of this entry, many resources exist that provide such a background (see for example, Efland, 1990; Historical Perspectives in Art Education, n.d.; Soucy & Stankewicz, 1990; Whitford, 1923; etc.). Diverse in their narratives, what many of these chronologies of the history of arts education have in common is an origin story that grounds contemporary arts education in the practice of apprenticeship, specifically in regard to the time and place of the society in the form of art being practiced. From this perspective, arts teaching and learning emerged from utilitarian roots coupled with culture and history. This is true in the United States, as it is likewise true in other Western contexts, including the emergence of formal arts learning in many European settings.

Defining Arts Education

While arts education intersects with many other pedagogical practices (e.g., aesthetic education, the study of art history, instruction in arts appreciation, project-based learning, STEAM education, design- and maker-centered education, etc.), here, arts education is defined and discussed from the perspective of the institutionalized arts disciplines.¹ While viewing the arts from this perspective, it is important to note that there are multiple purposes for arts education. It is especially important to note that many of the purposes for arts education stretch beyond merely achieving mastery in a particular arts discipline. In a large-scale study of excellence in arts teaching and learning, Seidel, Tishman, Winner, Hetland, and Palmer (2009) surfaced seven different purposes for arts education. Among the purposes Seidel et al. identified are the fostering of broad dispositions and habits of minds; the development of artistic skills and practices (without making them primary); the development of aesthetic awareness; support for understanding the world; engagement with community, civic, and social issues; self-expression; and individual development.

Of course, grounding a definition of arts education in the arts disciplines requires a discussion of those disciplines. In this regard the very term “arts education” may be cause for confusion for some as the phrase “art education” (without the “s”) is perceived by many to relate to teaching and learning in the visual arts.² Alternatively, “arts education” (with the “s”) brings a plurality to the language that suggests teaching and learning in all of the various arts disciplines. For many, there are four disciplines that are covered under the umbrella term “arts education”: the visual arts, music, dance, and theater (see “Possible in Visual Arts” and “Possible in Performing Arts,” this volume). For many others, the arts disciplines further include the literary arts, media arts, and design (in all of its many forms, e.g., textile design, web design, fashion design, landscape design, etc.). Within each of these disciplines there are subdisciplines. For example, within the discipline of the literary arts there is poetry, fiction, screenwriting, playwriting, creative nonfiction, etc.

For the purposes of this entry, arts education is defined as teaching and learning in or through the arts disciplines, within any number of formal or informal educational contexts. Arts education may involve the direct instruction of the techniques associated with a particular arts discipline, the history of notable movements, works, and contributors to a particular arts discipline, the integration of the arts into the teaching of other non-arts disciplines, or the teaching of the arts to support cognitive development or greater, social, civic, political, or community-based change.

The Multiple Purposes of Arts Education

As noted previously, there is not one, but rather multiple purposes for teaching and learning in

and through the arts.³ Whereas some view the development of knowledge and skills within the arts disciplines as being the primary purpose for arts teaching and learning, others may view the development of knowledge and skills within the core content areas as being the primary purpose for arts teaching and learning. Others still may view a range of cognitive, social, or cultural outcomes as being the primary purposes of arts teaching and learning. Yet, there are many in the field who would not choose one of the above-mentioned purposes over another, but rather subscribe to the view that arts education serves a plurality of purposes (Seidel et al., 2009).

Arts Education to Advance Proficiency and Practice Within the Arts Disciplines

Perhaps the most straightforward and easy to comprehend understanding of the many purposes of arts education are those that subscribe to the development of skills and techniques associated with one or more of the arts disciplines. From this perspective, the goal of arts education may be to support an appreciation of a particular arts discipline, to support proficiency in that discipline, and perhaps to pursue mastery in that discipline. On one end of the spectrum, many elite conservatories and institutes of art have been established to foster mastery in particular disciplines, sometimes producing innovators in those disciplines that further their field. On the other end of the spectrum, many school-based, after school, and community-based programs have been established to offer arts education experiences with such discipline-based learning goals in mind – though with a much more casual, recreational, or self-enrichment spirit – often without the expectation of mastery.

Arts Education to Support Achievement in the Core Content Areas

Another approach to arts education uses the arts as a vehicle to support achievement in other

² Indeed, many of the historical accounts of arts education are grounded in an understanding of education in the arts as being an education in techniques associated with the visual arts.

³ For a broader discussion of the multiple purposes of arts education, see Seidel et al. (2009), as referenced above.

domains, particularly in the core content areas. Widely known as *arts-in-education* or more specifically expressed as *arts integration*, the goals of these approaches to arts education have less to do with pursuing proficiency or mastery within a given arts discipline, but more to do with supporting the proficiency of students in other subject areas (see, for example, Burnaford, Brown, Doherty, & McLaughlin, 2007; Burnaford, Aprill, & Weiss, 2013; Mishook & Kornhaber, 2006; etc.). Many advocates for arts integration might argue that the arts provide an entry point or an *on ramp* for students who may not excel in classrooms where the core content areas are taught in more traditional manners. This argument is predicated on the idea that the arts make teaching and learning experiences more accessible for young people and adults. In this regard, the *vehicle* of the arts may take many forms. A painting exercise may be used to teach abstract math concepts, a music exercise may be used to teach basic grammar, a dance exercise may be used to illustrate a scientific process, a theater exercise may be used to probe a historical event, etc.

Arts Education to Support Cognitive Development

Whether taught on their own or within the context of other content areas, there are many who argue that the primary purpose of arts teaching and learning is to support the development of an array of cognitive capacities (see, for example, “Creative Development,” this volume). This variety of cognitive capacities is sometimes referred to as *soft skills*, *dispositions*, *habits of mind*, or *noncognitive skills*.

Elliot Eisner (2002, 2003) was a professor of arts education at Stanford University and a fervent advocate of the arts, “the arts, when well taught,” he argued, “are fundamental in refining sensibility and cultivating the capacity to think imaginatively” (2003, p. 343). In 2002 Eisner published an influential text entitled *The Arts and the Creation of Mind*. Within this text, Eisner articulated ten lessons the arts teach that have often been used as advocacy points for arts education. Eisner’s ten lessons include (among others):

- “The arts teach children to make good judgments about qualitative relationships.”
- “The arts teach children that problems can have more than one solution and that questions can have more than one answer.”
- “The arts celebrate multiple perspectives.”
- “The arts teach students that small differences can have large effects.”
- The arts teach students to think through and within a material.”⁴

Consistent with the emphasis placed on the ten lessons the arts teach as articulated by Elliot Eisner, Lois Hetland, Ellen Winner, and their colleagues (2007, 2013) and Jill Hogan and her colleagues (Hogan, Hetland, Jaquith, & Winner, 2018) engaged in research to explore what they termed *the real benefits of the arts*. Here, the authors described the real benefits of the arts as thinking dispositions, which they refer to as *habits of mind*. Through their research, Hetland, Winner, and their colleagues have identified eight interrelated *studio habits of mind*. The eight studio habits of mind include the following: *Develop Craft*, *Engage & Persist*, *Envision*, *Express*, *Observe*, *Reflect*, *Stretch & Explore*, and *Understand Art Worlds*. While particular to the arts (and perhaps even more particular to the visual arts), each of the eight studio habits of mind delineated by Hetland, Winner, and their colleagues and Hogan and her colleagues is described as a thinking disposition that includes a set of skills, motivation to use those skills, and an alertness to occasion as to when to use those skills. While pertinent to the studio art classroom, the argument can be made that these eight studio habits of mind are transferable to other classrooms – or to other aspects of life and work.⁵

Contemporaries of Hetland and Winner, Shari Tishman and Patricia Palmer (2005, 2006, 2007) have likewise taken a thinking dispositions

⁴Quotations excerpted from National Art Education Association. (n.d.). The ten lessons the arts teach by Elliot Eisner. Retrieved from <https://www.arteducators.org/advocacy-policy/articles/116-10-lessons-the-arts-teach>

⁵See <https://www.studiothinking.org/the-framework.html> for an overview of the Studio Thinking Framework.

approach to describe the benefits – or purposes – of arts education. Through their research on *Artful Thinking*, Tishman and Palmer likewise surfaced a variety of dispositions that are supported by arts instruction, and transferable to other domains. These dispositions, known as the Artful Thinking Palette, include: *Comparing & Connecting*, *Exploring Viewpoints*, *Finding Complexity*, *Observing & Describing*, *Questioning & Investigating*, and *Reasoning*. To support students and teachers in the development of their artful thinking dispositions, Tishman and Palmer have further developed a variety of *thinking routines*, short cognitive exercises, which may be used to “routinize” generative thinking dispositions grounded in explorations of the arts.⁶

Arts Education to Support Social, Civic, Political, and Community Change

Beyond the purposes of arts education associated with individual growth for students, there are those that further believe that one of the primary purposes of arts education is to spur social, civic, political, and community change (see, for example “Artivism,” this volume). From this perspective, the arts are seen as a means to protest and resist, as a means to assert one’s voice – or the voice of a community – and as a means to empower communities of people to pursue change. The intersection between these multiple change agendas and arts education is often described as *social justice and arts education* (see, for example, Bell, 2011; Garber, 2004; etc.). For many, the origins of social justice and arts education date back to the twentieth Century Civil Rights Movement. In reality, the arts – and arts education – have been leveraged for social justice purposes and used as an instrument of dissent for centuries – or even millenia. During contemporary times, social justice and arts education lies at the intersection of many different educational and social movements. And while the goal of social justice and arts education is to affect

change, the means to do so are by supporting students in understanding the injustices that exist in the world, in making those injustices visible, and in giving students a platform for their voice that they may not have had otherwise. In this way, the arts catalyze learners to speak up against injustices and to question what it means to participate in civic life. At times, issues of social justice and the arts take place on a national and international scale, but more commonly, arts education can be leveraged to support learners to address inequalities and injustices more locally.

Critical Perspectives on Arts Education

While there has been much written about the benefits of arts teaching and learning by many arts education advocates (see, for example, Fiske, 1999; McCarthy, Ondaatje, Zakaras, & Brooks, 2004; Seidel et al., 2009; Sinclair, Jeanneret, & O’Toole, 2009; etc.), education in the arts is not without its critics. Three popular critiques of arts education are that (a) it is a curricular frill that does not adequately support academic or cognitive growth, (b) that the dominant arts education narrative is biased toward the cultural interests of white, Western, patriarchal culture, and (c) arts education highlights the gap between the haves and the have nots, perpetuating inequality in learning.

Arts Education Does not Significantly Contribute to Academic and Cognitive Growth

Insofar as arts education is a brand of teaching and learning, many stakeholders across the edu-sphere would expect that it would yield significant academic and/or cognitive outcomes. Some critics of arts education, however, would argue that the arts do no such thing, particularly within formal schooling environments. While indeed it is the case that the arts taught for the sake of themselves within conservatories or esoteric institutes bolster proficiency in the arts disciplines, those who are more concerned with student proficiency in the core content areas may deny the value of the arts in the support of academic – or even cognitive

⁶See <http://pzartfulthinking.org/> for more information about the Artful Thinking Palette and associated thinking routines.

growth. In other words, the arts are viewed as an educational frill without any real academic value. Here, there is a fissure within the arts education field.

Some individuals that are staunch supporters of arts integration (see Sect. 3.2.) believe that the arts not only make education more accessible to young people, but they further support achievement in the core content areas. These individuals have argued that students who are taught the core content areas through arts practice attain higher test scores and generally enjoy increased academic achievement more so than those who are taught the same subjects through traditional non-arts methods. Despite the passion of such advocates and the persuasive arguments that they make, a metaanalysis of arts education studies claiming either causation or correlation between the arts and academic achievement found inclusive evidence for this argument (Hetland & Winner, 2001). This research supports the argument that the best way to teach math, science, or literature – is to teach math, science, and literature. The *real* benefits of the arts lie not in their residual academic effects, but rather in their cognitive and dispositional outcomes (see Sect. 3.3). That being the case, a more recent meta-analysis of research on the academic effects of drama-based pedagogy (a form of arts integration) offered contrasting findings (Lee, Patall, Cawthon, & Steingut, 2015). This study found that Drama-based Pedagogy had positive educational effects, especially in the English language arts and science classrooms, when taught under certain conditions.

That being the case, there are further critics of arts education who argue that the value of arts education does not lie in its potential to support intellectual or cognitive outcomes, but rather in its potential to support emotive or expressive outcomes. Here, a distinct line is drawn between the cognitive and intellectual benefits of arts education and the affective and emotive outcomes of arts education. While few will deny the latter, some contest the former. In 1967, Project Zero, a research center at the Harvard Graduate School of Education, was founded to directly take on this challenge. Led by the philosopher Nelson Goodman, Project Zero was established to study the

cognitive affordances of the arts (Gardner, 2013). Since its inception, researchers at Project Zero (and many of their colleagues) have argued against the claim that the arts are merely affective and emotive pursuits, but instead, that engagement in the arts and arts education has the potential to support many generative cognitive outcomes, including useful thinking dispositions and habits of mind (see, for example, Eisner, (2002, 2003); Hetland, Winner, Veneema, and Sheridan (2007); Tishman and Palmer (2006); etc.), that are beneficial within arts environments and in a host of non-arts settings.

Arts Education Is Biased Toward the Cultural Interests of White, Western, Patriarchal Culture

Over the centuries, as many European countries expanded their empires by colonizing other nations, they brought with them the art and cultural practices from their homelands. As Ballantyne and Burton (2005) write, “the impact of colonialism and the results of empire building are not restricted to ‘high politics’ and state practices, but also shape everyday life at a global level, influencing the languages we speak, the clothes we wear, the food we eat, the music we listen to, and the arts and culture we are inspired by” (p. 1). Since the fourteenth century, the world has become artistically connected as a result of European colonialism. The European conquest of countries around the globe – including the “third world” – has introduced imbalanced power structures within the arena of the arts and culture, just as it has within the social, economic, and political sphere. While local and indigenous art and cultural practices persist in many territories, European art forms have become the dominant form of arts practice for many others. Naturally, with an emphasis placed on Eurocentric arts practice comes an emphasis placed on Eurocentric approaches to arts education.

This brand of critique may further suggest that the biases inherent in the dominant arts education narrative play a role in perpetuating social inequities by “reify[ing] hierarchical conceptions of artistic practices in education and broader society” (Gaztambide-Fernández, 2013, p. 211). Within

the dominant arts education narrative, teaching and learning in the arts is often limited to the arts disciplines as defined by the Western canon (for a counter example see “Street Art,” this volume). From this perspective, arts education either positions non-Western heritage practices as being *less than* the Western arts disciplines, or by relegating them to the status of *craft* or *folk tradition*.

Arts Education Perpetuates Inequality and Promotes Elitism

Even within the West, there are those who argue that there is an inherent elitism associated with arts education, and instead promote the pursuit of maker-centered learning, or maker education. This critique of arts education foregrounds the idea that *making* takes many different forms within various social and cultural contexts. Deeming some forms of making as art (including all of its associations with European high culture) belittles all other forms of making, which have equal if not greater value within society, culture – and the classroom. In other words, whereas works made by artists are placed on pedestals and in gold-leafed frames, the work of craftsmen in their shops and seamstresses at their sewing machines are merely viewed as utilitarian goods that are produced not to be wondered at – but rather to be sold at market. In a popular quotation from *Art as Experience*, John Dewey (1934) makes an argument against the pedestal upon which the arts are often placed:

The intelligent mechanic engaged in his job, interested in doing well and finding satisfaction in his handiwork, caring for his materials and tools with genuine affection, is artistically engaged. The difference between such a worker and the inept and careless bungler is as great in the shop as it is in the studio. Oftentimes the product may not appeal to the esthetic sense of those who use the product. The fault, however, is oftentimes not so much with the worker as with the conditions of the market for which his product is designed. Were conditions and opportunities different, things as significant to the eye as those produced by earlier craftsmen would be made. (p. 5)

Dewey’s argument here is largely rooted in the distinction made between art and the craftwork of tradespeople, or more specifically, the “separation

of art from the objects and scenes of ordinary experience” (p. 6). At the heart of this distinction is the notion of aesthetics. While Dewey believed that there are aesthetic experiences to be found in one’s everyday interactions, the relegation of certain objects to art galleries and museums (and musical or theatrical performances to ornate opera houses, theaters, and concert halls) presupposes a hierarchy of aesthetics that differentiates between artful objects and experiences and the objects and experiences of everyday life.

The elitism critique of arts education extends into the domain of access and equity wherein many have argued that young people and adults from higher socioeconomic classes are likely to have more access to arts teaching and learning experiences than those from lower socioeconomic backgrounds. It is commonly understood that within under-resourced schools and communities, arts learning experiences are likely the first to be cut from the curriculum, whereas in more affluent communities and in sufficiently funded schools, arts teaching and learning opportunities are likely to be more abundant – and of higher quality (Tamer, 2009).⁷ This suggests that the arts – and arts education – are values of the upper classes – and that art education persists in environments that serve those social classes – to perpetuate the values and social standing of those classes.

With this foundational argument in place, one can make the connection between arts education and what Pierre Bourdieu and his colleagues (Bourdieu & Passeron, 1977) have described as *social and cultural reproduction*. In brief, the concept of social reproduction suggests that a particular social class of people endeavor to reproduce the conditions under which members of their social class thrive above others. Similarly, cultural reproduction suggests that a particular culture of people endeavor to reproduce the environment under which members of their culture can thrive above others. Education, from a Bourdieuan perspective, is seen as a vehicle for social and cultural

⁷While this is largely true, some have noted that science labs, sports equipment, and other such materials are just as likely to be cut from the budget in under-resourced schools and communities.

reproduction. Inasmuch as arts education may be viewed as being biased toward the interests of white, Western, patriarchal culture and a value of the higher social classes, then indeed arts education can likewise be viewed as a vehicle for social and cultural reproduction.

Connections to the Now and the Possible

Despite the critiques mentioned above, considering the now and the possible for the field of arts education opens up a vast opportunity space (see “Pedagogies of the Possible,” this volume). Not surprisingly, the now and the possible of arts education echo – and build off of – current ideas about arts education and our contemporary learning climate.

Hit with the 2019 worldwide pandemic, teaching and learning was forced to take place through nonphysical channels. Arts teaching and learning took on a new dimension, arts educators and students were pushed to reimagine, reshape, and reform. As it continues to evolve and adapt to a variety of teaching and learning environments, arts education continues to serve as a pathway to a host of possibility spaces. Below, six such possibility spaces (among many prospective others) are discussed: arts education as a connector across cultures and identities; arts education as a space to think between the disciplines; arts education as a vehicle for change; arts education as a provocation for innovation; arts education as an enactment of our humanity; and arts education as a means to tell our story to future generations.

Arts Education Supports Connections Across Diverse Cultures and Identities

In today’s highly connected world, the distances between cultures are much smaller than they were even a few decades ago. Contemporary technology, migration, and access to travel have enabled us to cross boundaries and widen the breadth of who we interact with, collaborate with, and within what environments and contexts we engage with one another (Seidel, 2013). As we cross parameters and boundaries through the interactions that we have each day, the different cuisines we enjoy,

the media we consume, and the people we see on the streets, we act as participants in culture in the form of both respondents to and bearers of a variety of cultures and identities. After spending time with a West African Ewe drumming ensemble, Sociologist Juliet Hess (2010) described her experience, “[m]y participation in an Ewe ensemble in Toronto demonstrates that cultures are indeed travelling musically. The question then becomes: when cultures travel, who or what is figured is refigured or remade and what becomes possible after the encounter?” (p. 157). The arts travel with cultures, and vice versa. The assemblage process of receiving the arts through our experiences, making sense of those experiences, and then sharing those experiences with one’s community describes the process of the arts (and arts learning experiences) serving as a connector across diverse cultures and identities. The possibility space for arts education, then, becomes the bridge that it may form across varied cultures and identities.

Arts Education Provides the Space to think Between and Across the Disciplines

While there has been much hype about STEAM education (adding the “A” for the arts to Science, Technology, Engineering, and Math (STEM) education), there is even greater value for arts education to provide a space for learners to make connections between and across the disciplines.⁸ Beyond merely combining a discrete set of disciplines, arts education may provide learners the opportunity to see the space that lies between the disciplines, and then to make connections across disciplines. In this regard, arts education supports the development of what may be understood as *multimodal thinking*. In other words, drawing on the multiple modalities of the disciplines as is necessary through the pursuit of an arts learning experience.

⁸For a critique of the STEAM agenda, see Clapp, Solis, Ho, and Sachdeva (2019). Complicating STEAM: A Critical View of the Arts in the STEAM Agenda. Retrieved from https://link.springer.com/referenceworkentry/10.1007%2F978-981-13-2262-4_54-1

Arts Education Serves As a Vehicle for Change

In an era where social injustices are ubiquitous, arts education has the potential to act as a vehicle for social change. Bell and Desai (2011) have stated, “social justice requires that as much as we use our critical faculties to grasp the complex and invidious ways that systems of oppression operate, we also need to engage aesthetic and sensory capacities so as to create and experiment with alternative possibilities – imagining what could otherwise be” (p. 287). The arts have long been a driving force in combating social injustices by delivering social and political messages in many ways. Arts education may serve as a means for learners to consider a social and political possibility space that is more equal, fair, and liberatory. As Bell and Desai have written, “[t]he tension between art and its social justice function is one that we cannot afford to treat lightly, especially if the arts are to give us the conceptual means to imagine and discover other ways of living together that are more equitable and just” (p. 290). Given the powerful role that the arts may play in addressing inequities, and the ongoing presence of such inequities within our contemporary world, then it is logical that arts education should be leveraged as a means to prepare learners to demonstrate and demand equitable social change.

Arts Education Provokes Innovation

Around the world, the arts and arts education are valued differently from one learning environment to the next. Too often, however, the arts are reduced to a marginal space in the curriculum. As Winner, Goldstein, and Vincent-Lancrin (2013) have stated, arts education remains marginal in many school settings but “education policies and initiatives based on arts education are gaining ground as a way to make education more innovative. Typically, these initiatives try to foster an innovative culture in teaching and learning in order to improve students’ academic outcomes but also creative dispositions and other social and emotional skills” (p. 25). Indeed, the world has a growing interest in innovation, with countries, corporations, and communities making increased investments in innovative programs

and practices. With this growing interest in innovation, one of the most powerful arguments that can be made for arts education is that, as noted in the OECD’s (2010) innovation strategy, the arts empower people to engage in innovation. The connection to arts education and innovation is usually made through *creativity*. Arts education advocates have long argued that arts teaching and learning experiences foster capacities and dispositions associated with creativity, imagination, and invention. To the degree that these same capacities and dispositions are essential to workers in the innovation economy, arts education may be seen as a vehicle to equip young learners for later careers in innovative industries.

Arts Education Facilitates the Enactment of Our Humanity

In our digitally mediated world driven by consumerism, corporate interests, and a 24-h news cycle, it may be easy to become swept up in the moment and caught in the flow of contemporary life. Somehow consistent with the fast pace of contemporary life is the ubiquity of the banal: cheap furniture, empty parking lots, packed freeways, and gut-rot gas station coffee.

Arts education may not be able to remove ourselves from the pace of this world or the banality of life entirely, but it can support us in finding a means to express our humanity. Whether for young people or adults, the arts, at their core, are expressive endeavors. Teaching and learning in the arts can not only support learners with the dispositions they will need to engage in the practice of aesthetics, develop higher order thinking skills, and speak up and speak out against injustices – it can also provide us with the capacity to express more of the intangible aspects about our inner selves and our lived experiences. Giving purpose to the things we make and experience – making life personal, uniquely experienced, and *special*.

Arts Education Informs How Will We Be Known in the Future

The artifacts of the past are how contemporary cultures come to know and understand the civilizations and cultures that have preceded them. In this way, the arts play a retrospective role –

providing a historical record of past human experiences. But the arts may also play a prospective role, too. The art that is made today has the potential to inform how contemporary societies and cultures are known and understood by the generations that will follow us tomorrow. Arts education, seen in this way, may be viewed as a means of documenting contemporary experiences to inform a future history that will reflect back on the now, telling the story of what it meant to be living in the world today. Arts Education, then, may equip learners to be the chroniclers of their experiences, the historical ambassadors of their cultures, and the ancestors of tomorrow. While there are many other means of chronicling contemporary experience for posterity (e.g., making a time capsule, keeping a diary, etc.), the arts flavor artifacts with expression, emotion, and a sense of aesthetic that tell a different story about what it means to exist today, perhaps more so than other more straightforward approaches to telling one's story – or the story of a collective people. A single artifact artistically crafted, unearthed decades, centuries, or millennia after its making, has the potential to connect experiences across time in a manner that is deeply subjective, sensory, and intimate. If art making has this sort of potential, then one of the possibilities for teaching and learning in the arts may be to prepare young people to not only aesthetically challenge and engage their worlds today, but also speak to the future tomorrow.

Conclusion

Arts education in its many forms is an integral part of a more comprehensive educational experience. From the origin of artifacts to the identified disciplines of the arts today, arts education has proven crucial to understanding humanity throughout history, provoking change, and documenting cultures and experiences. Arts education is, then, a core pillar to any kind of learning. It offers implications for the now and the possible in all formal and informal teaching and learning environments and further supports the development of the arts disciplines. It continues to open the door to new

achievements in already established arts domains, birthing the next generations of paradigm shifting artists, and shaping the future of aesthetics. Arts education may enhance student achievement in the core content areas, providing an onramp to success for students who may not have otherwise excelled in the classroom; arts education can support generative thinking skills and habits of mind that are cultivated in no other way – and it may serve as a platform for learners to develop their voice and speak truth to power. Beyond pushing further on current ideas about arts education, envisioning the future of arts education informs new purposes – and leads to greater possibilities. As Maxine Greene (1997), the often quoted philosopher of aesthetic education, once said, the arts provide us with the ability *to think of the world as if it could be otherwise*. In all of its variegated forms, if arts education teaches nothing else, it teaches us that very important lesson – the ability to see and embrace the world with all of its imperfections – and then imagine a much improved place that is just, and beautiful, and good.

Cross-References

- Creative Development
- Pedagogies of the Possible
- Possible in Performance and Performing Arts
- Possible in Visual Arts
- Street Art

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"As If" Thinking

James Clack
University of Bedfordshire, Bedford, UK

Abstract

The notion of "as if" thinking is somewhat ill defined; it is used in a variety of contexts and, as a result, often has different or even contradictory interpretations. There are however commonalities across the literature that appear to suggest that "as if" thinking concerns the ability to think in some imagined context other than the reality that is presented in front – to think "as if" one is something or somewhere else and/or to use objects in unorthodox ways, different from their intended use. In this respect then, "as if" thinking is closely tied to imagination and ► ["what-if thinking"](#).

Across the empirical research, "as if" thinking appears to be the result of the interplay and resultant outcome of four key characteristics or capacities – ► ["imagination"](#), pretend play, abstraction, and empathy. These four capacities, when combined, provide the basis for an individual to experience multiple possibilities and realities through lived experience. This entry then provides an overview of the empirical research on "as if" thinking; outlines the role that imagination, pretend play, abstraction, and empathy each have in "as if" thinking; and explores the role that "as if" thinking has in relation to the possible.

Keywords

"As if" thinking · Creativity · Possible · Imagination · Pretend play · Abstraction

Aaron: No one would have got my question ['Why did 100 people visit the library in May?'] [May was the highest month.]

Researcher: How would you answer your question?

A: Well, I kinda don't know, because it's a question about why did they go on [sic] May but not on a different day [sic]. . . It's just a weird question that I made up for some particular reason.

R: Yeah, it's a good question

A: Because why were there a hundred on [sic] May, they could have gone a different day [sic], couldn't they? (From Clack 2017, p. 63)

The transcript above comes from a Year 6 (ages 10–11) mathematics lesson. Children had been given a bar chart showing the number of visitors to a library over the course of 12 months and were then asked to devise their own mathematics questions. Expected outcomes were questions in the vein of the original task, comparing attendance in different months. Here however Aaron came up with a different type of question. Aaron was thinking about the data in a different way. He placed himself in the "real-world" scenario – *why* might there be differences in the attendances? What would I ask if *I* was the librarian?

There are Kantian roots to the notion of "as if thinking" (Schaper 1964) based around his notion of transcendental idealism. Transcendental idealism suggests we cannot know the "true" nature of reality, we can only know how it *appears* to us. As a result, "we are dealing with constructions and devices, with things that look *as if* they were something or other" (Schaper 1964, p. 220; original emphasis). Negotiating the real world requires us to accept that we can never know the "true nature" of reality; we only see things "as if" they were something else, and we construct our reality based on these interpretations. More recent discussions of "as if" thinking however have focused on child development while keeping the theme of seeing things "as if" something else. This "as if" thinking allows children to build a more concrete and complex understanding of the world. Indeed, "as if" thinking has been seen as part of the developmental stages in children's ► ["play"](#) forming a touchstone as their play – and their representations of reality – develops ever-increasing complexity (Bretherton and Beeghly 1989). In particular, it is in the context of play that the literature often explores the notion

of "as if" thinking; imaginative play, role play, pretend play, fantasy play, and so on appear to be necessary to "be in an 'as if' space" (Craft and Chappell 2014, p. 13).

Among the first authors to empirically describe and explore "as if" thinking in young children were Corrine and John Hutt (e.g., Hutt 1966; Hutt and Hutt 1989). In their research, they introduced children to unfamiliar objects and observed how their explorations of the objects changed with time and familiarity. They described this exploration as the move from "what is this?", the exploration of an object's physical characteristics, to "what can I do with this?", the use of the object in novel or unorthodox ways. Since then, the authors have sought to build on this work (e.g., Bretherton and Beeghly 1989; Chappell et al. 2008; Weininger 1986) and have explored "as if" thinking as distinct from "what if" thinking. Echoing Hutt's work, Craft describes this distinction as the move from "what is" to "what might be." Thus, "as if" thinking appears to be linked to different forms of "posing questions" (Craft and Chappell 2014), and research by these authors (e.g., Chappell et al. 2008) has sought to explore what type of questioning might result in "as if" thinking.

Despite this research, however, there seems to be little consensus on defining "as if" thinking across the literature. The term is often used without explicit definition or is mentioned within the context of other activity, perhaps as an outcome of some sort. Even within work by the same author, there can be differences from publication to publication – Craft, for example, describes it variously as "perspective taking," "being imaginative," and "question posing." What is possible, however, is to identify common features or capacities across the literature that are necessary, though individually not sufficient, for "as if" thinking. Imagination, pretend play, abstraction, and empathy each seem to have an important role in "as if" thinking.

Imagination and "As If"

Perhaps one of the foundational components of "as if" thinking is imagination; indeed, Craft and

Chappell (2014) have equated "being imaginative" with "as if" thinking (Craft and Chappell 2014, p. 13). At its most basic, imagination is the thinking process that drives play (Singer and Singer 2003) or "the thinking function of play... which sets the stage for the actual activity of play" (Weininger 1986, p. 25).

In addition to driving play, imagination – or imaginative play – also provides children with opportunities to develop, test, and explore familiar scenarios. This testing and exploring allows children to build, refine, or rebuild their working model of the world around them. As a result, imagination is often situated in real-world scenarios and linked with imitative behavior, such as role-playing in the "home corner" of a nursery classroom (Engels 2005). This imitative play creates a narrative for the child and allows them to build up their understanding of the day-to-day world and also to identify, reinforce, or reconstruct their knowledge and understanding of the boundaries between real and not real scenarios.

In providing the foundation for all play, imagination is therefore a necessary capacity for "as if" thinking. However, imagination is not sufficient for "as if" thinking. The process of "as if" thinking extends beyond imagination and toward the *actuation* of imagination. This we might describe as pretend play.

Pretend Play

Imagining – 'what if' – is a solitary activity within the child's mind, only sometimes overheard in actual words. Pretending – 'as if' – is usually done with other children, or for the child who has no one with whom to play, with imaginary people or dolls. (Weininger 1986, p. 28)

Pretend play, or pretence, appears too to be a central part of "as if" thinking. Children's early play may be largely imitative, repeating what they have seen in adult behavior or copying playful activities from more experienced peers (Russ 2003). Pretend play is more sophisticated and complex than imitative play as it involves "going beyond" imitative activity. Rather than recreating

existing realities, pretend play provides opportunities to create new, potentially unorthodox realities. Pretend play allows these new realities to be represented in action, a physical representation of the reality lived in the actor's mind. Building on the imagining of different possibilities, pretend play starts to put these imagined possibilities "into practice," often through assuming some related role or assigning of unorthodox or unconventional attributes to at-hand objects – a cone being used as a cup, a bowl being used as a hat, and so on.

This pretend play involves what Piaget describes as symbolic play – play using one object in place of another. Fein (1987) echoes Piaget, outlining pretend play as symbolic behavior in which "one thing is playfully treated as if it were something else" (p. 282). Symbolic play allows children to use myriad objects to represent their imagined narrative in the real world and to negotiate and reformulate these representations with those interacting in the narrative.

Pretend play therefore incorporates this symbolic play and "consist[s] of a child's understanding and representation of reality" (Weininger 1986, p. 22). Weininger suggests that this "real" pretend play "begins when a child uses a prop for something other than the activity for which it has been used with him by the caregiver" (ibid). Pretend play is the *implementation* of imagination, extending imagined ideas into new or unorthodox scenarios. Weininger describes this as the "as if stage" of play. Nevertheless, as with imagination, the ability to engage in pretend play is not necessarily synonymous with "as if" thinking. Pretend play, Bretherton and Beeghly suggest, allows children start to "perform very simple 'as if' enactments of routine events" (Bretherton and Beeghly 1989, p. 241). More complex examples of "as if" thinking go beyond pretend play and imagination. "As if" thinking appears to have a more abstract side to it: "more 'conceptual' playing or 'playing with ideas' rather than 'traditional' physical play" (Clack 2017, p. 66). To explore "as if" thinking further, we must also consider abstraction and empathy.

Abstraction and "As If"

The child's psychological world may contain more than the one distinction—real/not real. Children may make interesting and important distinctions within the pretend world. Once children narrate their play and tell stories, the as if world becomes multidimensional. It may well be that the 'as if' stance is a portal to a range of spheres of alternative realities. (Engel 2005, p. 515)

Abstraction refers to the process through which the features of, and relations between, objects are identified and experienced as separate from the concrete setting in which they are based, "something to do with the human ability to act independently in a world of objects" (van Oers 2001, p. 280) and "consists of taking information from the objects themselves, i.e., 'reading the features of a thing'" (p. 281). It is often conceptualized as some sort of "move" or "shift" – "moving" from concrete to the abstract and from abstract to the concrete (van Oers 2001), the "move" from "What is this?" to "what can I do with this?" (Hutt 1966), or the "shift" from "What is" to "what might be" (Craft 2008). The move from concrete to abstract has been described as "transposition-of-function" by Hutt (1966). Here, play occurs using tools and objects, during which time an "object explicitly fulfil(s) another function" other than its original intention or design (Hutt 1966, p. 70). This "transposition" is more complex than imitative and pretend play, advancing to a more representational form. Bretherton and Beeghly describe this as developing "counterfactual event representations," "moving" from the concrete to the conceptual (Bretherton and Beeghly 1989). That is, abstraction allows the child to "go beyond" their existing knowledge of a given scenario, formulate and reformulate their ideas, and act independently of real-world constraints.

Abstraction allows children to build an increasingly complex understanding of the world around them. It allows them to develop their understanding of real/not real, of possible/not possible, and builds a deeper understanding of the relationships between objects. Abstraction is a necessary part of "as if" thinking, but abstraction is not synonymous. For "as if" thinking, this "move" must be judicious. This takes empathy.

Empathy and "As If"

The above capacities each appear to be necessary for "as if" thinking: empathy – the emotional capability to consider how a situation might be experienced by another – appears to be the final capacity required by "as if" thinking (Clack 2017). The ability to empathize is an important developmental process for young children (e.g., Davis 1996), which improves as children better understand their experiences and the experiences of those around them. Indeed, the development of empathy appears to come from increasing participation in each of the three preceding capabilities (Hoffmann and Russ 2012), as pretend play and abstraction allow children to establish and negotiate rules with one another in different scenarios and roles. As the rules for these scenarios become more apparent, the actors begin to participate in an agreed-upon "imagined lived experience."

Craft highlights the importance of empathy, or "taking on another's perspective" (Craft and Chappell 2014, p. 1) when participating in "imagined lived experiences." An example of this may be seen in, say, children's play with wooden blocks, making constructions that change from cars to spaceships to unicorns as different children add to the on-going, changing narrative. It is important for each of the actors to acknowledge and understand the roles that other characters in the narrative play, in addition to understanding their own role to ensure that play flows smoothly. As what the blocks represent changes over time, each actor needs to "go with" this change and change their own role while also identifying the changing roles of others. In order to think or act "as if" in a narrative – to think "as if" they were that person – it is important to acknowledge the roles that other actors may have (Decety and Jackson 2004). That is, "as if" thinking not only requires imagining, pretending, and abstraction to create a new scenario, it also requires empathy with the scenario or character to understand how this scenario may form.

The identification of these four capacities appears then to help provide a meaningful basis from which we can start to conceptualize – and potentially identify – "as if" thinking. It is the

interplay of these capacities that leads to "as if" outcomes. Aaron's mathematics lesson, outlined at the start of the piece, provides an example for us to examine.

Aaron and "As If" Thinking

The vignette at the start of this chapter showed Aaron in a mathematics classroom but considering the problem set from an unorthodox perspective. Here, Clack (2017) suggests, is a compelling – though not unique to Aaron – example of "as if" thinking in the classroom. In this example, it is possible to identify each of the important capacities of "as if" thinking. We can see imagination – "going beyond" the original task and thinking of a new way to approach it. We can see pretend play – as Aaron assumes the role of a librarian. We see too abstraction – the "transposition-of-function" of the data, from mathematical task to contextualized scenario. Finally, we can see empathy – Aaron approaches the task with consideration of the types of questions that a librarian might reasonably ask. Note that this empathy goes beyond mere pretend play – it is not Aaron "pretending to be a librarian." Rather, it is Aaron "living" that experience.

Importantly, this example also shows that "lived" experience and "transposition-of-function" need not be a physical manifestation or manipulation. That is, "as if" thinking need not be evidenced through some recognizable role-play with objects per se, but may be realized through other less immediately visible means. As noted above, empirical research on "as if" thinking has often focused on young children (e.g., Chappell et al. 2008; Craft 2008; Cremin et al. 2006). These examples identify young children using objects in unorthodox ways – ways in which the objects were not originally designed. Aaron's activity shows how manifestations of "as if" thinking may differ or develop from younger children to older children – that "play" can be seen in a variety of ways and areas. This then allows us to start to conceptualize "as if" thinking beyond the current research that has largely focused on very young children. If, contrary to Weininger's

(1986) assertion, "as if" thinking does not occur only with others or with imaginary people, this opens up a new and interesting avenue for research.

"As If" Thinking, Creativity, and the Possible

"As if" thinking is not commonly discussed in the creativity literature. Of the many models conceptualizing creativity, one of the few that specifically highlights "as if" thinking as being part of the creative process is Craft's "Possibility Thinking" model (e.g., Chappell et al. 2008; Craft 2008; Cremin et al. 2006). Craft and her colleagues identify Possibility Thinking as the "driver" for creativity, central to which is the posing of questions. It highlights the importance of play to creativity and the notion of "moving" in some way, from a concrete, everyday scenario ("what is") to a more imaginative, abstract scenario ("what might be"). It is defined as, "exploratory transitions from 'what is' to 'what might be', encapsulated as the posing of the question 'what if?' in different ways and contexts, together with perspective-taking, or 'as if' thinking" (Cremin et al. 2013, p. 135). Possibility Thinking situates "as if" thinking as a driver for creativity when in combination with "what if" thinking – as necessary but not sufficient.

Again, while "as if" thinking does not feature heavily in much of the creativity literature, each of the capacities important to "as if" thinking has been identified as playing a role in the creative process. The role of play in creativity is well documented (e.g., Russ 2003; Lieberman 2014), as is the role of imagination (e.g., Duffy 2006). Russ has explored extensively the role that pretend play has in creativity (e.g., 2003, Hoffmann and Russ 2012), suggesting that, "the capacity to use fantasy and engage in 'as if' play behaviour should also be important in many domains of creativity" (Hoffmann and Russ 2012, p. 175). Similarly, as outlined above, numerous authors have explored the role of abstraction – "moving" from the tangible to the representational – as part of creativity; the ability to think of multiple new

scenarios and act both within and outside of the parameters of the original scenario has also been highlighted as driving creativity. Finally, Craft has identified "wise creativity" (e.g., Craft et al. 2008), highlighting the role of empathy within creativity. Thus while there is perhaps a lack of literature defining "as if" thinking, "as if" thinking does seem to play an important, if as yet unexplored, role in creativity.

Similarly, "as if" thinking appears to play an equally important, and similarly unexplored, role in the "possible." "Seeing" multiple possibilities and perspectives – *imagination* – is a foundational part of the "possible," whichever domain we seek to understand it (rt), and helps us "go beyond." Exploring possible worlds, possible selves, and possible pasts or futures all require us to extend our understanding beyond the existing concrete situation in which we situate ourselves. In other words, we need to *abstract* ourselves beyond the existing world as we explore further possible scenarios. To identify how these scenarios might play out, what the results or consequences might be, it is important to identify our potential role(s) in these scenarios; a way to do this may well be through *pretence*, either through physical play or mental conjecture (Kahneman and Tversky 1982). Finally, it is *empathy* that is required for us to understand how these scenarios relate to others in these scenarios and the role that they may play in this possible world. "As if" thinking then appears to play an important role in how we might understand and explore the notion of the "possible."

Summary

While there seems to be no agreed-upon definition of "as if" thinking, we can identify different capacities that are apparent when it occurs – imagination, pretend play, abstraction, and empathy. That said, there appears to be little consensus on the use of the phrase; it is possible to identify "as if" thinking, "as if" spaces, "as if" play behavior, and "as if" activity when exploring the literature around "as if." Furthermore, different authors place varying importance on the four capacities

of "as if" thinking. Bretherton and Beeghly (1989), for example, suggest that "what if" thinking is more complex and skillful than "as if" thinking; Weininger (1986) and Craft (e.g., Craft and Chappell 2014) appear to say the opposite that "what if" thinking is a precursor for "as if" thinking. Clack (2017) does not make a hierarchical distinction but distinguishes them by how they might be evidenced, with "what if" being more about physical manipulation and "as if" more conceptual.

Furthermore, the four capacities identified appear to overlap in description and function. The distinction between "imagination" and "pretend play" is not clear-cut in the literature, while Russ (2003) in her empirical work links imagination, pretend play, and empathy. The link between imagination and abstraction too is strong; Weininger (1986) suggests that it is only in how each is made visible that distinguishes them. It is not the case that these capacities should be conceptualized as distinct stages or ordered steps to the goal of "as if" thinking; rather they are presented as necessary to the process.

As with the literature on creativity, the literature exploring "the possible" identifies the importance of "as if" thinking but rarely provides explicit definition. The "possible," whether in relation to possible worlds, possible selves, or possible pasts or futures, appears to be driven by imagination and by abstraction of current scenarios into possible future ones. "Living" these possible worlds and understanding how they relate to others involve pretence and empathy. We can see the importance of the role then of "as if" thinking in the "possible."

Navigating the literature then is somewhat murky, and establishing a clear, concise definition of "as if" thinking upon which all authors and researchers might agree is challenging. Further empirical work aiming to identify and examine "as if" thinking may be needed to clarify these differences – or may muddy the waters further. Nevertheless, whether seen as developmental steps of increasing complexity, or as a progressive extension of imagination, outlining four aspects of "as if" – imagination, pretend play, abstraction, and empathy – provides us with a useful platform

from which to better understand and better identify "as if" thinking and its connection to the possible.

Cross-References

- [Imagination](#)
- [Play](#)
- ["What If" Thinking](#)

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Automobility Studies

Richard Randell ¹ and Robert Braun ²

¹Webster University Geneva, Geneva, Switzerland

²Institute for Advanced Studies (IHS), Vienna, Austria

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Definition

The multidisciplinary research field of automobility studies has articulated an alternative account and description of automobility to that which is routinely disseminated by an assemblage of automobility-related interests, in popular culture,

in advertisements, and by automobiles themselves. Automobility studies has opened up the possibility of developing a critical, alternative description of automobility, and the possibility of imagining a postautomobility future for our planet.

Introduction

The Oxford English Dictionary (3rd ed., entry for “Automobility”) defines automobility as “the use of automobiles or motor vehicles as a mode of transport.” It is an appropriate place to start, as “mode of transport” is how people unfamiliar with the term “automobility” are likely to initially understand the term. Dictionaries, however, as Martin Heidegger (1971, p. 172) once observed, “have little to report about what words, spoken thoughtfully, say.” This is so also in the case of automobility.

One can begin with the assumption that something called “automobility” exists “out there” in the world; the epistemological challenge then becomes how to analyze and describe “it.” Alternatively, one can begin with the assumption that what we understand automobility to be depends on how it has been defined and constructed in the first place: what it is, what its boundaries are, and what it is not. In everyday life, one way in which we understand automobility is as it has been defined by an assemblage of automobile-related interests.

“Philosophy,” Richard Rorty (1982, p. 226) once remarked, “is not the name of a natural kind but just the name of one of the pigeonholes into which humanistic culture is divided for administrative and bibliographical purposes.” “Automobility studies” is similarly a name for an administrative and bibliographical pigeonhole, identifiable through possession of what Wittgenstein referred to as a family resemblance. It is a community of scholars, research centers, and a bibliography that has challenged commonsense understandings of automobility. Automobility studies scholars have asked what those understandings are, where they originate, who they benefit, and what their consequences are. The automobility studies community not only has

articulated a critical, alternative account of automobility to that disseminated in advertisements, the mass media, by automobile manufacturers, within popular culture and public discourse, but also it has defined these representations of automobility as themselves intrinsic components of automobility and thus also as objects of inquiry and critique. Doing so raises the question of power: the capacity to define what automobility might or might not be – as simply a “mode of transport,” as nothing more than the materiality of automobility, cars, and infrastructure, for example. Whatever the validity or usefulness of these representations, these definitions *qua* representations are also components of automobility.

Automobility under its commonsense designations is a set of claims and assumptions regarding what automobility *is*. What distinguishes automobility studies is not only that it has articulated an alternative set of claims and assumptions, but also that “automobility” has been constructed as an object of theoretical and empirical inquiry. In offering an alternative definition of automobility, it has entered into the already existing politics of persuasion of automobility. The politics of automobility includes not only the obvious, such as the activities of automobile-lobbying organizations (Organisation Internationale des Constructeurs d’Automobiles 2019), but also ostensibly nonpolitical events, spaces, and activities, such as motor shows (Randell 2020a) and automobile advertisements which, in addition to attempting to convince us to purchase a specific automobile, endlessly reproduce the utopic visions of automobility that we routinely encounter each and every day. There is no nonpolitical epistemological location from which automobility could be represented “as it really is.”

What Is Automobility?

Whatever the usefulness, or otherwise, of a dictionary as a starting point, in everyday life automobility is experienced as more than simply “a mode of transport.” Cars are routinely experienced as “status symbols,” markers of social class; they are dangerous, under risk of death

and injury, they must be negotiated whenever we enter a road, whether in a vehicle or as a pedestrian or other road user; they have become a necessity; and they possess esthetic and other qualities that make them desirable, beauty and speed, for example. Automobility is experienced as providing freedom, convenience, and pleasure, properties that we take to be unremarkable, obvious, and commonsense. Automobility, in short, is a hegemonic order.

Not only has automobility constructed a world, but also we ourselves have been constructed as persons who want and desire automobility (Paterson 2007). We have come to possess an esthetic subjectivity, a Kantian faculty of judgment (Kant 2000), that experiences the socio-technical machines that are automobiles as beautiful objects of desire. Like the world that automobility has constructed, so have we been constructed as automobile subjects who, in the very acts of driving or passengering (Pearce 2016), are transformed into one component of a human-machine cyborg entity (Randell 2017).

With the initial appearance of automobiles on public roads at the turn of the twentieth century, automobiles provoked public opposition (Norton 2008). It was only in the mid-twentieth century that automobility began to be researched, theorized, and critiqued. In an essay first published in 1959 in *The New Yorker*, Lewis Mumford (1963, p. 220) observed that the US federal highways project required “slashing through old neighborhoods, stealing land from public parks, dumping traffic in urban centers.” The result of “the utopia that highway engineers have been busily bulldozing into existence” was impoverished urban and rural environments. John Keats’ (1958) *The Insolent Chariots*, which was on the *New York Times* bestseller list for 5 weeks, was a critique of automobiles, automobile manufacturers, road construction, death and injury, and the expense of automobiles. “We are,” Keats (1958, 158) wrote, “building a nation for automobiles rather than one for people.” Ralph Nader’s (1965) *Unsafe at Any Speed: The Designed in Dangers of the American Automobile* focused on American automobile manufacturers and the vehicles they manufacture. As the title made clear, it

was not, however, in Nader's view, all automobiles that were "unsafe at any speed" (cf. Braun and Randell 2020) but American automobiles. Below Nader's claims lay the assumption that there was such a thing as a "safe automobile," but it just did not happen to be an American automobile, which were unsafe because of design flaws that American manufacturers were well aware of.

What distinguishes contemporary automobility studies from these earlier critiques is having constructed a distinct object of empirical and theoretical inquiry, which is neither automobiles nor the collective singular noun "the car," but "automobility." The canonical texts of automobility studies have made the case for the existence of a *sui generis* entity – automobility – that is understood to be comprised of more, both materially and conceptually, than simply automobiles. Those components include, John Urry (2004) argued in a seminal paper, "The 'System' of Automobility,"

car parts and accessories; petrol refining and distribution; road-building and maintenance; hotels, roadside service areas and motels; car sales and repair workshops; suburban house building; retailing and leisure complexes; advertising and marketing; urban design and planning; and various oil-rich nations.

It is a list that can be infinitely expanded, to include tow-trucks, ambulances, operating theaters, undertakers, and funeral parlors; oil tankers and naval forces to protect oil supplies; and a geopolitical order that protects, upholds, and tacitly supports the human rights crimes of the regimes of the oil-rich nations mentioned by Urry. That also is automobility.

Steffen Böhm, Campbell Jones, Chris Land, and Matthew Paterson (2006, p. 3) in *Against Automobility* describe automobility as:

one of the principal socio-technical institutions through which modernity is organized. It is a set of political institutions and practices that seek to organize, accelerate and shape the spatial movements and impacts of automobiles, whilst simultaneously regulating their many consequences. It is also an ideological (see Gorz 1980) or discursive formation, embodying ideals of freedom, privacy, movement, progress and autonomy, motifs through which automobility is represented in popular and academic discourses alike, and through which its

principal technical artifacts—roads, cars, etc.—are legitimized. Finally, it entails a phenomenology, a set of ways of experiencing the world which serve both to legitimize its dominance and radically unsettle taken-for-granted boundaries separating human from machine, nature from artifice and so on.

The term "automobility," they observe, "has become recognized shorthand for referring to these different meanings" (Böhm et al. 2006, p. 4). How automobility studies are to be described and what automobility studies scholars understand automobility to be become, consequently, one and the same question.

It is against this theoretical backdrop that the components and properties of automobility have been described and analyzed across a spectrum of methodological and epistemological perspectives (Randell 2020b) in a now considerable and diverse corpus of empirical automobility research (Merriman and Pearce 2017). Encompassing political economy (Paterson 2007), cultural studies, the humanities, film studies, literary criticism (Pearce 2016), gender studies, race (Pesses 2017) and racial domination (Sorin 2020), Science and Technology Studies (STS), geography, law, and policing (Seo 2019), these studies have provided thick empirical detail and content to our understanding of automobility.

One can begin, as noted above, with the assumption that something called "automobility" exists "out there" in the world, or with the assumption that what we understand automobility to be depends on how it has been defined in the first place. The former, realist perspective, allows for epistemological disagreement – claims regarding what the properties of an already existing automobility might or might not be – between, for example, proponents and critics of "automobility." The latter, constructionist account, opens up the possibility to identify and empirically examine what, precisely, an assemblage of institutional agents (such as automobile manufacturers, state entities, and lobbying organizations) have been able to convince us to believe regarding what automobility is and what automobility is not; not only in respect to belief but also how we experience automobility, as a desirable, efficient, pleasurable, common-sense mode of transport, for

example. This represents a shift away from epistemology to ontology, not only the construction of epistemological claims but also the construction of an ontology, a world. So conceptualized, automobility may be described as a political ontology (Esposito 2021), namely an ontology which, to understand how and by whom it has been constructed, requires attending to power and politics, the latter in the widest sense of the term.

“A picture, Ludwig Wittgenstein (2009, § 115) wrote in *Philosophical Investigations*, “held us captive. And we couldn’t get outside it, for it lay in our language, and language seemed only to repeat it to us inexorably.” Automobility may be described as precisely such a picture. We cannot get outside it; we are convinced of its veracity. Through the combined activities of an assemblage of human and nonhuman agents, a utopic picture has been constructed that is repeated to us inexorably. The language within which automobility lies – in both senses of the word – is not only words but also cars themselves and the world they have created. It is this picture that automobility studies have challenged.

The Sociotechnical Imaginaries of Automobility

In *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, Sheila Jasanoff (2015: 4) defines sociotechnical imaginaries as: “collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology.”

The history of automobility may be read as a history of a succession of sociotechnical imaginaries of the type defined by Jasanoff, each of which predicted a utopic automobile future, none of which came to pass as envisaged and promised. One of the more well-known examples is the Futurama exhibit in the General Motors pavilion at the 1939 New York World’s Fair (Jam Handy Organization 1940), which envisaged a safe and efficient automobility future located in a future

1960. Two contemporary examples are the electric vehicle sociotechnical imaginary and the autonomous vehicle sociotechnical imaginary (Braun 2019). They are regularly discussed and reported on in newspapers, on television, in trade publications, and in specialist automotive magazines, as well as in academic publications. They are promoted at motor shows and museum exhibitions (Braun and Randell 2021a). They are institutionally stabilized through the efforts of private and state actors. Embodied in prototypes and concept cars and disseminated in public visions of a desirable future, they are imaginaries, respectively, of a sustainable and accident-free automobility future. The technological fixes associated with these two imaginaries, we are being assured, will solve the problems of automobility’s contribution to the environmental crisis (Morton 2013) and road violence (Furnas 1935).

The assumption on which autonomous vehicles are being promoted is that automobile violence is not an intrinsic property of automobility but is contingent in that accidents are caused primarily by “driver error” (Braun and Randell 2020, 2021b). Neither automobiles, nor oil companies, nor automobile manufacturers are considered responsible for the charnel ground (Morton 2013, p. 126) that is automobility; rather, it is the driver who has been identified as the principal cause. Already in just the first two decades of the twenty-first century, 25 million people have been killed in what are routinely referred to as “accidents.” Each year, 1,350,000 people are killed by automobility and 50 million people are injured (World Health Organization 2018), and many hundreds of millions of animals are killed and injured (Davenport and Davenport 2006; Grilo et al. 2020). We can expect these figures to continue to rise, not fall, in the coming decades. It is estimates such as these that stand on one side of a moral equation, on the other side of which are the ostensible pleasures, conveniences, and freedoms automobility provides.

Each year, approximately 90 million new cars are manufactured, few of which are electric vehicles. Even on its own terms, by the time a global fleet of internal combustion engine automobiles would be replaced with electric vehicles, it will be

too late. Moreover, vehicles have their own demography. Electric vehicles do not replace internal combustion engine automobiles but push them “away” (Morton 2016) to the used car markets of the Global South, out of sight of the environmentally conscious inhabitant of the Global North. While electric and autonomous vehicles are promoted as solutions to two problems that superficially appear to be separate problems, namely climate change and road accidents, the two problems are identical: violence that results in death and injury (Braun and Randell 2021b).

“Sustainable automobility” is usually understood to mean ecologically sustainable, an automobility that no longer is based on fossil fuels. Another possible meaning of “sustainable automobility” is an automobility that is able to reproduce itself in the face of the harms it causes. Electric (automobility) is a case in point. Harms are caused “elsewhere,” in the mines of Africa or in hazardous waste collection facilities (EPA 2021). In continually promising futures wherein the problems of today will have been solved, the sociotechnical imaginaries of automobility contribute to the sustaining of automobility and its further expansion. As imaginaries of a future of safe and climate neutral automobility, they ensure the reproduction of automobility by offering a solution to which many have been convinced: the manufacturing of at least a billion new automobiles to replace the ones that currently exist. It is in this sense that we should understand the term “sustainable automobility.”

The Possible

There are two facets of “the possible” that automobility studies have opened up. First, in having articulated a critical and alternative account and narrative to the one that is inexorably repeated to us, it has performatively constructed an alternative account and description of automobility. The second “possible” that automobility studies has opened up is the possibility of living in a post-automobility world.

The alternative account of automobility, which is roughly the bibliography of automobility

studies, only fragments of which it has been possible to here mention or cite, is not limited to suggestions for remediating automobility, nor is it limited to criticisms of automobility such as the improbability that autonomous vehicles will reduce automobile violence in any meaningful way. Rather, it is an attempt to understand an entire way of life. In Heideggerian terms it is what Being-in-the-world might mean in the age of automobility in which we live (Randell 2017, p. 674), two measures of which are the total number of automobiles currently on the world’s roads (more than one billion) and the total kilometers of roads that to date have been built (64 million). “To understand our aesthetic experience of road traffic in the modern city,” Nigel Taylor (2003, p. 1611) has remarked, “is in large measure to understand our aesthetic experience of the modern city, period.” Much the same could be said of our entire planet.

One way to think about a postautomobility future is as a necessary but unwelcome future, as a loss that regrettably must be endured, not only, but also perhaps above all, due to the need to limit planetary greenhouse gas emissions, for which we are receiving our final warnings regarding the gravity of the climate emergency that is no longer located in the future but is already upon us. A postautomobility world would be not a world where the automobile has simply been replaced by equally oppressive mobility technologies. That too would be no different from what now goes under the name “automobility.” Postautomobility is not a world of connected, electric, autonomous automobiles, nor would it be a world of “flying cars,” another of the many sociotechnical imaginaries of automobility.

Another way to think about a postautomobility world is as a better world than the one we currently inhabit, not as a constraining and unfortunate necessity. A world where the urban and rural spaces that have been appropriated by and for automobiles (McShane 1994; Norton 2008) have been reclaimed for other purposes; a world absent the routine violence of automobility; a world the natural habitats and resources of which are not being systematically depleted and destroyed; a world where there is room for other species and

beings besides ourselves; a world in which the world itself is not being terminally destroyed.

Yet another way to imagine postautomobility is as an entirely different political ontology to the one that has been constructed by the human and nonhuman agents mentioned above. It would be a different ontological constellation of power and politics, a different world than the one we now inhabit.

Summary

Automobility studies has articulated an alternative, critical account of automobility to that routinely disseminated by an assemblage of automobility related interests. This has required making visible the violence that is routinely occluded within the automobility imaginary. Automobility studies has made possible the development of an automobility politics directed towards bringing a post-automobility future into existence (Braun and Randell 2022a, b).

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Autonomy

Elisa Kupers¹ and Linda Hendriks²

¹University of Groningen, Groningen, The Netherlands

²Hanze University of Applied Sciences, Groningen, The Netherlands

Abstract

The concept of autonomy has received considerable attention in both –philosophy and psychology. From the perspective of philosophy, autonomy refers to self-governance of one's actions. In psychological theory, the focus has been more on human beings striving to experience autonomy and self-determination. In this entry, we will examine the elusive concept of autonomy from different theoretical angles and focus in particular on how autonomy emerges through social interactions and how

it develops over the course of the lifespan. We will pay special attention to the role autonomy plays in creativity and the exploration of the possible.

Keywords

Autonomy · Agency · Social interactions · Creativity · Possible

People can be self-driven, taking initiatives and shaping their own environment, or they can be helpless or hesitant, governed by authorities and unable to make their own decisions. What exactly does autonomy entail, and how does autonomy play a role in interacting with the possible? Is autonomy a more or less stable personal characteristic, or is it different in different situations?

In this entry, we will discuss the well-known yet elusive concept of autonomy both from philosophical and psychological perspectives. We will briefly discuss the empirical research on how autonomy might be a central feature of “being human” and of human's psychological thriving. Autonomy will be discussed further not only as a central human “trait” or characteristic, but more as an enacted, dynamic property that emerges in the interactions humans have with their social and material environment. This will bring us to connecting autonomy not only to the interaction with the “here-and-now” but also to the interaction with the possible and with creative processes.

Different Theoretical Perspectives on Agency and Autonomy

Both agency and (personal) autonomy have been explored extensively in philosophy. “An agent is a being with the capacity to act, and agency is the manifestation of this capacity” (Schlosser 2019, p. 1). According to some definitions, agency can only be called agency if it is fully intentional, driven by intentions or desires, and in line with one's attitudes. That would imply that only humans can act with full (or higher-order) agency. However, agency can also be seen in a broader

sense. Not only (human) mental states such as beliefs and motives can be a cause for action, but also drives such as hunger or aggression. That would mean that agency is not a uniquely human concept and can also be displayed by non-humans.

One widely agreed upon part of the definition of agency is that agency involves the *initiation of action* by an agent. It is exactly this initiation part of the definition that links agency to autonomy. An agent is one who acts; autonomous agents are self-governing agents. Because no one else can initiate actions other than the agent herself, all agents can be said to exercise self-governance or autonomy (Buss and Westlund 2018). But what does self-governance entail exactly? Sometimes one is forced to do something by some external authority. Sometimes someone does something “in spite of herself,” as a result of internal conflicting forces, such as a recovering addict pouring herself a drink, although she had sworn to never to drink again. Although an action cannot be performed without it being initiated by the agent, there are certainly cases where this self-governance is at a bare minimum because the behavior is determined not by the agent’s own (conscious) motives but by other forces. In such situations, autonomy in the sense of self-governance is merely a formality.

In the area of psychology, autonomy has been known through the theoretical work on personal causation (de Charms 1968) which was later further developed in self-determination theory (Deci and Ryan 1985, 1991). De Charms observed, as we will discuss further down this entry, that human beings develop from not being able to distinguish between the self and others, to discovering more and more their capacity to exert effects in their environment. Psychology on motivation had, until then, mainly focused on goals that people set for themselves and the efforts they exert to obtain these goals. De Charms saw the *desire* that human beings have to be causal agents as the underlying principle underneath specific goal setting and goal-directed behavior: “Man’s primary motivational propensity is to be effective in producing changes in his environment” (de Charms 1968, p. 269). As a consequence, he also saw a

crucial role for *the experience* of causal agency in one’s behavior. In other words, it does not really matter whether, in a given situation, there was true self-governance over one’s behavior, as long as the person experienced a sense of freedom and autonomy in determining their own actions. The attribution of causes is important: persons can perceive themselves as causal agents (or “origins” as De Charms puts it) or as being governed and “pushed around” by external forces (as “pawns”). This perception of self-governance or autonomy can differ per person, but also within persons. One can feel an autonomous agent in one situation and a helpless pawn in another.

Following the work of De Charms, self-determination theory embraced the perception of autonomy as a key feature in distinguishing between different kinds of motivation. Types of motivation can be placed on a continuum ranging from being completely extrinsic (such as acting upon reward or punishment) to being more internalized. The most optimal form of motivation is motivation that is truly intrinsic and in accordance with one’s own motives and desires. The theory further states that in order to achieve this kind of intrinsic motivation, three basic psychological needs have to be met: the need for autonomy, competence, and relatedness. The need for autonomy refers to the need to have a sense of control over one’s actions, to not be passively “steered” by others in one’s environment but instead to feel self-driven; to act in accordance with one’s sense of self. The other needs are the need for competence, which refers to the need to feel able to reach the goals one has set for herself and the need for relatedness, which refers to the universal human need for a sense of belonging to one’s social environment, to make deep and meaningful connections to the people around oneself. The needs are not entirely separate; indeed, the need for autonomy is “woven into” the other two needs. For the need of competence, for example, only goals that are autonomously chosen or embraced by oneself, truly result in feelings of genuine competence. Autonomy can be said to be the underlying dimension that gives fulfillment of the other two needs true meaning (Deci and Ryan 1985, 1991).

The fundamental difference between the philosophical and the psychological perspective on autonomy is that self-determination theory (or the psychological perspective) is mainly or exclusively interested in the extent to which human beings *experience* autonomy, regardless of the more philosophical question of whether humans *are* in fact self-driven. Consider the extent to which a student in a classroom feels autonomous. Instead of the teacher giving one assignment for all students, she lets the students choose whether they want to complete the standard test on the subject, or whether they want to challenge themselves more by making a more complex assignment. The student chooses the challenging assignment and completes it successfully. A philosopher might comment that this situation still poses many constraints (the choice of the student might be random instead of fully intentional, many of the choices are already imposed by the way the educational system works, the teacher only provides two choices, and perhaps she might even subtly nudge the more accomplished students towards the more challenging assignment). That would mean that the student's actions and choices are not truly self-governed and therefore not completely autonomous. From a psychological perspective, although the environmental constraints and enablers are certainly noticed and subject of investigation (see later on in this entry) what in the end matters is whether the student *experiences* a sense of autonomy in this situation.

The Development of Autonomy

Research in developmental psychology, most notably the fundamental work of Piaget, sheds light on how we develop into more or less autonomous individuals. The foundations for agency lie early in infancy (Siegler and Alibali 2005). Piaget stated that the newborn is mainly governed by reflexes, but that their actions soon, already after the first months, become more and more intentional. After a few months, infants already show a very rudimentary form of agentic action. They perform an action; feeling a blanket, grasping

their parent's finger, experience the sensation, and repeat it. Piaget called these "primary circular reactions." Later, after about 4 months of age, these cyclical actions are expanded to not only their own bodies (feeling, grasping), but also the world around them (for instance, kicking a mobile, watching it move, kicking again). Although it would be too early to ascribe goals to infants, in their repetition of manipulations to the world around them already a very rudimentary, embodied sense of agency emerges. The agentic actions are still very much connected to the here-and-now and elicited directly by aspects of the physical world close to them. These agentic attempts become more precise, elaborate, and coordinated over time.

An important change occurs around 12 months of age, when young toddlers begin to intentionally vary their behaviors: when they drop a ball on the floor repeatedly, for instance, they alter the altitude of the fall, alternate between dropping and more forcefully throwing behaviors to observe the different effects. This change is especially relevant when linking agency to the possible: by varying their actions intentionally, children explore *what could be done* with an object, rather than repeating intentionally what has been done before. They seem interested to find out what variations produce different effects. Indeed, divergent thinking tests have been developed for children as young as 2 years old where divergent thinking is operationalized in a non-verbal and embodied way, as the extent to which children vary their agentic actions and explore "new" possibilities of objects through these actions (Bijvoet-van den Berg and Hoicka 2014). New has to be seen in the "mini-c" meaning of the word, that is, a new discovery for the child herself but not necessarily for others. This interaction with the possible, but still very much grounded in the physical and social environment of the here-and-now, is the prelude to the development of pretend play, where children explore possibilities that are more and more moving away from the current, grounded reality and more towards stretching the boundaries of reality and (im)possibility (the block of wood is a car, I am a dinosaur).

Next to the developing *capacities* to act more and more agentically, in interaction with the current and the possible, there is also an increased *desire to act autonomously* throughout childhood and adolescence. In fact, one might think of child development as an increasing exploration of who one is, and what one can do, by themselves and out of their own choice. This striving is more pronounced in some developmental phases than in others (and of course, more pronounced in some children than in others). Parents will recognize the infamous “terrible twos” as a period where children are often exercising their autonomous will and desire to practice with capacity for self-governance (expressed by saying “no” to their parents’ demands and “I do it myself” often). Another developmental phase that is known for the desire for increased autonomy is of course adolescence. In this phase, the child is able to see more and more possibilities for oneself, and is more conscious of the different possibilities for identity development, increasingly independent of their parents. Their exercising autonomy and desire for more self-governance fits that picture (McElhaney and Allen 2012).

Autonomy as Socially Constructed

Autonomy does not develop in a social vacuum. Rather, there are many constraints and enablers within any given situation that either allow the emergence of a deep sense of autonomy or that can in contrast hinder one’s feeling of autonomy. In theory and research on autonomy, much emphasis has been laid upon social influences on (perceived or observed) autonomy.

In Interpersonal Theory, agency is viewed as one of two core dimensions of people’s interpersonal behavior. In interactions between two (or possibly more) people, the persons engaging in interaction display agency in their behaviors to some extent. In the interpersonal sense, the emphasis is not so much on the extent to which behavior is truly self-governing, but more on agency relating to roles in the interpersonal interaction. An important principle here is complementarity on the agency dimension (Gurtman

2001). One of the parties is initiating, leading, proposing, which elicits following, listening, or undergoing behavior from the other person. Importantly, although persons can develop a “style” of interacting with others, recent research shows this enacted agency in interpersonal interactions is dynamic and fluid; a person can be leading in one moment and following in the next, much like a dance where the roles are not fixed and leading and following alternate (Sadler et al. 2009; Pennings et al. 2014). Interestingly, research on patterns in interpersonal interaction also shows that occupying alternating roles in interaction give rise to exploring possible states of interacting with one another, and that more flexible dyadic interaction patterns where multiple possible states of communication are explored give rise to more advantageous outcomes (Granic et al. 2007), although studies on these mechanisms relating this specifically to autonomy are currently lacking.

Concluding, autonomy can be seen as a state rather than a trait, and more specifically, a state of being that emerges through co-regulated social interaction. The experience of autonomy, therefore, has its roots in these emergent social interactions, characteristics of which can either enhance or inhibit the personal experience of autonomy. It is perhaps not surprising that a great deal has been done to uncover how autonomy can best be promoted or cultivated, in particular in education, parenting, and in work environments.

Cultivating Autonomy

A large body of research on how to cultivate autonomy exists especially in the area of education. Teachers and other significant figures in children’s environments, through their interactions with students, can support students’ autonomy in order to stimulate their motivation, agency and engagement with tasks in a meaningful way (e.g., Reeve et al. 2004; Reeve 2009; Vansteenkiste et al. 2005; Cheon et al. 2020). Although autonomy refers to the feeling that one’s actions emanate from oneself and are one’s

own (Deci and Ryan 1987, p. 1025), students are in many situations still dependent on support from a more competent other (Ryan and Deci, 2006). The example at the beginning of the entry, of the student being able to choose their own assignment, is one illustration of how autonomy can be fostered by the teacher who at the same time provides structure by narrowing down to two relevant options.

“Autonomy support” refers to an interpersonal approach taken to help students experience learning as relevant to their self-determined goals and interests and to help them realize these goals and interests (Assor et al. 2002). Autonomy support nurtures students’ meaningful engagement with tasks and stimulates their agency in several inter-related ways. Stefanou et al. (2004) distinguish among organizational, procedural and cognitive autonomy support and stress the importance of the latter. First, autonomy support is student-centered and entails offering students the space for their own discoveries (Deci et al. 1994). This involves questioning and inviting students to explore and provide time for this. Stefanou et al. label this approach cognitive autonomy support as it provides students ownership of their learning. Offering time to think and observing students while they are exploring, affords teachers to monitor the learning process and ask relevant follow-up questions. Secondly by providing organizational autonomy support (Stefanou et al. 2004) teachers can provide students with ownership of environment by offering them relevant choices concerning with whom or where to work, implementation of criteria and rules, and so on. Offering procedural autonomy support generates ownership of form and this involves a.o. choice in tasks, materials, task approach and how to display results. Third, autonomy support is associated with welcoming, informational and non-controlling language (Reeve 2009) which expresses showing respect to students (Stroet et al. 2013). Supporting children’s autonomy this way encompasses stimulating children to imagine possibilities and engage in meaningful activity in a creative process where goals are

emerging and are taking shape, along with the material results of their endeavors.

Despite the benefits of autonomy support shown in research in educational settings, teachers tend to adopt a low-autonomy supportive, controlling style of teaching during instruction time (Reeve 2009). A controlling style is teacher-centered and involves imposing the teacher’s own perspective on students’ thoughts, feelings and/or actions, as well as the exercise of pressure (Reeve 2009).

Autonomy, Creativity, and the Possible

As stated before, a key feature of the development of human autonomy involves the agentic exploration of the possible. The discovery of having control over oneself, and the ability to manipulate the environment goes hand in hand with the exploration of the different possibilities of exercising this agency: first embodied in the manipulation of the physical world, but soon already in pretend play and hypothetical thinking. Linking this to creativity, we can see clear relationships between the agentic exploration of the possible, real or imagined, and idea generation (see Creativity, this volume). Continuing this reasoning, we can see divergent thinking as agentic exploration of the possibilities that are the least obvious.

The concept of “possibility thinking” was coined in the early 2000s to describe the practices children and teachers engage in in classrooms and which are believed to be key to creative thinking in schools. Possibility thinking comes down to a shift between focusing on “what is this and what can it do” to “what could this be and what could I do with it.” Possibility thinking includes posing questions, engaging in play, immersion and making connections, being imaginative, innovation, risk taking, and self-determination (Cremin et al. 2006; see also Possibility Thinking, this volume). By engaging in possibility thinking, the child is *agentially engaged* in exploring possibilities and generating novel ideas. However, creativity encompasses more than just the stage of idea generation. Just as agency in interpersonal

communication involves an alternating dance between leading and following, creativity involves both being pro-active and agentic, initiating actions and ideas, but also listening to others, observing, evaluating (especially in collaborative forms of creative performance, such as jazz, dance, and theatre improvisation, see Sawyer (2000)). Indeed, even professional creatives working alone describe being “taken over” by their own work of art, and being in a flow where they follow the lead of the creative work-in-progress. (see, Inspiration, this volume).

The literature on stimulating possibility thinking and creativity in education shows remarkable resemblance with the literature on autonomy support. Profiling learner agency is key in fostering creativity: students should be provided with multiple opportunities where they can initiate their own actions, students are encouraged to be active and independent, to take risks and to experiment (Cremin et al. 2006; Sawyer 2017). In classrooms where creativity blossoms, the usual classroom dynamic where the teacher is the authority figure and students are following, is abandoned. Instead, pedagogy is student-led rather than teacher-led and teachers often consciously “stand back” to let students figure things out for and among themselves.

But also here, there is more to it than just providing a lot of autonomy support for students to not only engage with the possible at the level of exploration, but also at the level of deeper engagement with possibility and creative ideas. Sawyer (2017) notes the tension that exists between allowing students freedom and standing back on the one hand, and providing structure and guidance on the other hand. Not all students fare equally well with completely open-ended assignments and ill-defined problems. The careful balance between fostering students’ autonomy at the right times and putting in boundaries, constraints, and evaluations is necessary for “productive” and deep exploration of different possibilities. This providing structure could on the one hand help to narrow down an overwhelmingly large landscape of endless possibilities. On the other hand, the teacher can also help by guiding students into exploring a broader

horizon of possibilities than they had imagined by themselves.

Summary

To conclude, autonomy is a key element of engaging with the possible. Agentic exploration of the possible, in interaction between oneself and one’s physical and social environment, is a cornerstone of human functioning and development from a very early age onwards. The desire to experience autonomy in one’s actions is uniquely human and an important drive behind exploration of the possible. That does not mean that agency should be experienced all the time. In interaction with the here-and-now, as well as in interaction with the possible, agency and autonomy can be seen as a dance where leading and following alternate.

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Avatars

Stéphanie Buisine¹ and Jérôme Guegan²

¹CESI, Nanterre, France

²University de Paris, Paris, France

Abstract

Avatars are virtual characters that now belong to the popular culture around video games, social networks, and digital applications in general. However, using an avatar may not be as insignificant as it seems, because avatars, by providing us with a fresh new appearance, may impact the very perception of our own identity. The aim of this entry is to offer an overview of the sociocognitive processes influenced by the use of avatars and illustrate them with empirical findings from the literature, including examples related to the Proteus effect. Finally, we will open avenues as to what could become possible through avatars, in particular in the field of avatar-mediated creativity.

Keywords

Avatar · Proteus effect · Virtual world · Self-perception · Deindividuation · Creativity

Avatars are digital characters, often customizable, representing users' identity in a virtual environment (Meadows 2008). They are projections of users, or "tangible embodiment of their identity" (Ducheneaut et al. 2009). Users can create avatars looking like them, experience a multiplicity of identities or highlight certain aspects of their ideal self (Bessière et al. 2007). Thereby, the configuration of avatars allows users to change their appearance, their social roles, and their identity in the virtual world. The relationship between users and their avatars may even provide support to engage people with lifelong disability in activities

and social interactions (Stendal et al. 2012). A recent line of research has also shown that users' behaviors are influenced congruently to their avatar's identity. This behavioral modulation was named Proteus effect (Yee and Bailenson 2007, 2009) after the Greek God Proteus who possessed the ability of metamorphosis.

At a theoretical level, explanations of the Proteus effect are primarily rooted in self-perception theory and deindividuation effects. Self-perception theory argues that individuals come to "know" their own attitudes, emotions, and other internal states partially by inferring them from observations of external cues, which include their appearance and overt behavior (Bem 1972). Individuals observe external cues on themselves to explain their own attitudes and internal states, just as an external observer would. This is why a change in self-representation (e.g., through an avatar) may lead to a change in behavior. Moreover, self-perception reliance on identity cues (and therefore on avatar's appearance) is likely to be enhanced when individuals find themselves in contexts of anonymity and deindividuation (see Yee et al. 2009). Deindividuation refers to situations in which people are not identifiable as individuals (e.g., in large groups, but also in a virtual world, see Postmes and Spears 1998), and therefore experience a loss of self-awareness. This was shown to moderate the impact of contextual cues on individual behavior (Spivey and Prentice-Dunn 1990; Yee et al. 2009).

Because avatars constitute "our entire self-representation" and virtual contexts emphasize reliance on cues related to the visual appearance of one's avatar, the Proteus effect leads users to exhibit behaviors and rationalize them so as to remain consistent with the avatar's identity (Yee and Bailenson 2007). Instances of the Proteus effect have been found in various avatar-based systems, influencing a diverse range of decisions and behaviors (for a recent review, see Ratan et al. 2019): for example, attractive avatars lead to behave in a more intimate way in terms of self-disclosure and interpersonal distance (Yee and Bailenson 2007; see also Waddell and Ivory 2015). It should be noted that this phenomenon results from the mere exposure to a virtual mirror

allowing the participant to see his/her avatar for about 1 min. In this respect, it can be considered that the Proteus effect is initiated almost instantly. In another study, Yee and Bailenson (2007), Yee et al. (2009) have shown that tall avatars lead to more confident behavior than short avatars in a negotiation task. Recent studies have also shown that the appearance of the avatar may affect subsequent behavior in the real world (Yee et al. 2009; Rosenberg et al. 2013; Yoon and Vargas 2014). For example, the benefits of a tall avatar on negotiation endure in a subsequent negotiation task in a face-to-face situation (Yee et al. 2009). Likewise, it was found that the weight of avatars influence real life physical activity during motion gaming sessions (Peña et al. 2016; Peña and Kim 2014). This means that the appearance of an avatar influences users' behavior not only in the virtual world, but also in the real world.

Beyond behavior, it has also been shown that avatars could influence attitudes and productions of the users. For instance, the embodiment of female avatars, with an appearance more or less sexualized, can impact perceptions and judgments toward women (Fox et al. 2013), and the use of a doctor versus a Ku Klux Klan avatar can influence the content of stories composed by the users (Peña et al. 2009).

Another line of reasoning argues that the effect of avatars' appearance on users may also be explained through priming (Bargh et al. 1996; Peña et al. 2009). According to Bargh et al. (1996), priming refers to "the incidental activation of knowledge structures, such as trait concepts and stereotypes, by the current situational context" (p. 230). Avatars could then be seen as a priming support leading to behavioral assimilation, i.e., an increase in the likelihood of behaviors congruent with the primed concept. For instance, embodying an avatar whose appearance is likely to activate antisocial concepts (e.g., violence, aggression, racism) could lead to behave in a more negative way.

It was shown that avatar appearance in video games impact subsequent aggressive cognition. For example participants displayed more aggressive attitudes and intentions toward other players when their avatar wore a black cloak – a color

associated with death and evil (Adams and Osgood 1973) – than when they wore a white coat (Peña et al. 2009, Study 1). Eastin et al. (2009) found that White players displayed more postgame hostile thoughts after having embodied a Black avatar than a white avatar. Ash (2016) showed that players embodying a Black avatar in a boxing game exhibited greater aggressive in-game behavior than those embodying a White avatar. However, this effect was only present for players experiencing high levels of embodiment.

Moral orientation of the embodied character – heroic versus villainous – also impacts post-game behavior. Happ et al. (2013) showed that participants who had embodied Superman exhibited greater prosocial behavior and less hostile perception bias than those who had embodied a stereotypically evil character – the Joker. Rosenberg et al. (2013) showed that embodying an avatar possessing superheroes' powers (flying) volunteered more to help the experimenter pick up pens he had dropped than those who had flown as passengers of a virtual helicopter. Finally, Yoon and Vargas (2014) asked participants to play a game, embodying Superman or a villainous avatar (Voldemort), and then to take part in a blind test of food – taste a dish and add an unspecified amount of chocolate (prosocial action) or chili sauce (anti-social action) for consumption by a future participant. Participants who had embodied Superman behaved in a more prosocial way than those who had embodied Voldemort.

The influence of avatars on users who embody them is now well established in the literature, and this effect may impact users' behavior and/or attitudes, both online and offline, for better and worse. Hence, this body of research suggests that a targeted use of avatars bears the potential of supporting the achievement of high goals and the opening of possible futures. In the following section, we address more particularly the issue of increasing creativity through the use of avatars.

Avatars, Creativity, and the Possible

In this series of experiments, we used avatars to modify self-perception in order to improve one's

creative performance. To do so, the first step was to identify what kind of avatars would likely increase the perception of one's creative skills. These experiments being conducted with engineering students, we studied the cognitive representation of creativity in this population. This led us to identify the concept of the Inventor as a common relevant creative figure for engineers (Guegan et al. 2016). Accordingly, we designed and validated avatars featuring characteristics of inventors (e.g., looking like Einstein, wearing a lab coat or using scientist's instruments). We expected that users of these avatars, observing their digital appearance ("I embody an inventor"), would make implicit inferences about their creative skills ("I am creative") and improve their creative performance ("I have a lot of ideas/good ideas"). Consistently, our results show that engineering students using inventor avatars during a virtual brainstorming session performed significantly higher in fluency and originality in comparison to students using neutral avatars and students in a face-to-face electronic brainstorming situation (Guegan et al. 2016). Moreover, this benefit endured over time since participants allocated to inventor condition continued to perform higher in a subsequent face-to-face brainstorming. Subjective data also showed that brainstorming in a virtual environment (either with a neutral or a creative avatar) was rated as funnier than electronic brainstorming system.

The previous experiment managed to increase creativity by making engineers identify with the figure of the inventor. In terms of innovation process, this is likely to emphasize engineers' talent to develop products of superior technological value and therefore support a Technology-Driver strategy (Jaruzelski et al. 2014) representing high degrees of R&D difficulty (Mantelet et al. 2016). Then we wondered whether avatars could be used to help engineers develop User-Centered innovations, motivated by customer needs instead of technological value. To investigate this question, we designed a case study with a major company from the transportation industry.

A group of highly qualified employees from the innovation department were attributed inventor avatars like in the previous experiment, and

another group was attributed avatars representing users of public transportation (Persona avatars, e.g., a mother with a newborn, a child, an elderly person, a train manager). Both groups were immersed in a transportation situation (metro tour across a virtual Paris) and had to find applications for smart windows in public transportation. As expected, the content of ideas was influenced congruently to avatars' appearance: the inventor condition led to a techno-centered ideation profile, oriented toward technological solutions, while the Persona condition led to more user-centered, needs-oriented ideas (Buisine et al. 2016). Consistently, inventors' production tended to be better evaluated through industrial criteria and Personas' production tended to be better evaluated by transportation users. These results suggest that avatar-mediated brainstorming could be a powerful tool enabling innovation team to align ideation to their strategy (e.g., technology-centered or user-centered).

Beyond self-perception and personal identity, avatars may also be a convenient medium to emphasize social identity in a virtual environment (e.g., Guegan et al. 2015). Social identity is defined as a part of self-concept linked to group membership (Tajfel and Turner 1979). In this way, a positive evaluation of one's in-group may contribute to a positive evaluation of the self, leading people to work as a group and for the group and exhibit increased performance (i.e., social laboring, Haslam 2004). Hence in a subsequent experiment, we introduced social identity cues on avatars' clothes as it could be implemented in various professional contexts (e.g., clothes in the colors and logo of a company, sport team jerseys). On the basis of the Social Identity Model of Deindividuation Effects (Reicher et al. 1995; Spears and Lea 1992, 1994), we assumed that virtual cues would exert a positive effect on group performance (see Tanis and Postmes 2008). By perceiving themselves as members of a group rather than coworkers who are "gathered together," individuals should be more likely to engage in online collaborative work. The results confirmed this assumption by showing that social identity cues on avatars' clothes increased both group identification and creative performance (Guegan et al. 2017). Hence avatars appeared as

a valuable tool to reduce social loafing and support teamwork in a meaningful way (see also Buisine and Guegan 2020). Moreover, in the context of a creative assignment, group identification may influence not only the perception of group members ("we" instead of "I"), but also of their ideas ("our production" instead of "my production"). Because attention to others' ideas is key to creativity (Paulus and Brown 2007; Michinov 2012), increasing the salience of social identity may also improve cognitive stimulation.

The use of avatars may therefore open up the field of possible in the context of group brainstorming: group facilitation is similar to electronic brainstorming system and can be conducted remotely through the instant messaging tool of the virtual platform. The facilitator can be represented by an avatar like all participants, or can manage the group without being embodied or materialized in the virtual world. Classical efficiency factors such as cognitive stimulation and social comparison are supported and can be further enhanced with relevant avatars' appearance. Moreover, virtual sessions were repeatedly evaluated as fun in all our experiments, which may contribute to foster engagement and creativity. Virtual brainstorming can also involve large groups to promote diversity of views and increase cognitive stimulation, as there is potentially no limit to group size in a virtual world. Idea generation is still performed through the written channel to avoid production blocking and improve attention to others' ideas. Finally, avatars provide a unique means to stimulate creativity through modifications of individuals' perception of their personal and/or social identity, thereby reducing social loafing and self-censorship to help everyone reveal his/her best creative potential.

Conclusion

Avatars have the advantage of triggering self-perception mechanisms that may positively impact creative processes in multiple ways: anonymity and the use of carefully chosen avatars may reduce self-censorship and social loafing, to the benefit of creative performance and innovation

strategies of companies. Avatars sharing social identity cues can help group members focus on team's issues and challenges, and create social laboring. They can also be used to infuse new dynamics, promote a new viewpoint, and change routines (e.g., hierarchical asymmetry, interpersonal relations, leadership) among regular coworkers. All these factors seem likely to help individuals develop their creativity, support innovation processes in organizations, and, more generally, build the possible.

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Awe

Alice Chirico

Department of Psychology, Università Cattolica del Sacro Cuore, Milan, Italy

Abstract

If experiences of profound transformation have a core moment, that can be awe, an emotion able to maximize the possibility to **change** especially through its self-transcendent nature.

Awe arises from stimuli so vast to prompt people to go beyond their current schema. Awe would drag people into a deep moment of **uncertainty** in which *assimilation* process fails, but *accommodation* has not successfully taken place yet. In this middle-suspended moment of extreme potential, everything might occur. This entry started with the current psychological definition of awe; then, it summarizes main researches in this field. Finally, I outlined the transformative nature of this phenomenon – as a self-transcendent emotion – and a new perspective to frame it in relation to a sense of *possibility* to **change**.

Keywords

Awe · Transformation · Change · Possibility

Definition

Awe is usually conceived as a positive emotion arising from circumstances able to shake our mental frames due to the vastity of the knowledge they tale with them (Keltner and Haidt 2003). This emotion denotes a fracture in people’s accustomed way to see themselves, the world, and others, which leads to several impacting consequences at the individual and at the social level. If this operational definition may look straightforward and clear, the path, which has led to this, has been not.

Etymologically, the English word “awe” derives from Middle English, as a substitute of the word *agi* in Old Norse. This term referred to a mixed feeling of fear and reverential respect imbued with **wonder** that people experience in response to a powerful Other (i.e., person or something divine). Along with philosophical perspectives on awe (Burke 1844; Kant 1989), which highlighted the importance of the negative fearful component of this emotion, also early psychological contributions on awe (Hall 1897; James 1902; McDougall 1908) strongly endorsed a negative nuance of this emotion. However, lately, with psychological work of Keltner and Haidt (2003), the negative side of awe gradually disappeared – in line with the current usage of the word – and attenuated the component of fear (Bonner and

Friedman 2011). Currently, its meaning is closer to **wonder** and reverence (Sander and Scherer 2014), with a more positive definition and use of this term with few exceptions (e.g., Sundararajan 2002). As Bonner and Friedman stated (2011) “Although earlier psychological understandings of awe routinely described elements of fear as predominating, more recent descriptions appear to deemphasize fear [...] it now appears that the concept of awe may be seen as related primarily to experiences with positive emotional valence, but for some the term may still have connotations of fear or even terror, or a combination of both positive and negative emotional valences” (p. 225).

Despite researchers still struggle to define the nature of this emotion, most agree that awe can be conceived as the core of profound **changes** in life (Bonner and Friedman 2011; Chirico and Yaden 2018; Miller and C’de Baca 2001; Pearsall 2007; Schneider 2017; Skalski and Hardy 2013; Yaden et al. 2017). Particularly, psychologists devoted the last 20 years to analyze the process underlying this **change** as well as the consequences of awe for human well-being and progress (Chirico et al. 2016). To systematize this rich corpus of studies, it is possible to identify two main perspectives adopted within psychology to elucidate the nature and effects of awe. First, the experimental approach has shed light on the pro-social potential of awe, on its impact on the sense of time, on mutual connectedness, attentional focus, ecological behaviors, body perception, sense of agency, endorsement of spiritual beliefs, creative thinking, and knowledge seeking (for a review see Chirico et al. 2016; Chirico and Yaden 2018). Overall, awe has been considered as a sparkle of unexpected **change** through different stages. For instance, Valdesolo et al. (2016) already configured awe as peak moment of an epistemological process stemming from surprise, **curiosity**, and **wonder**. Awe would emerge as a key driver of knowledge restructuring or conceptual **change**. More recently, Nelson-Coffey et al. (2019) suggested and showed that other **emotions** revolve around awe, such as compassion, optimism, gratitude, awe, and love within the domain of self-transcendence. Awe can lead to transformative **change**, but it is still not clear how and why. This aspect has been elucidated more in

detail by the second corpus of studies, which mainly relied on a qualitative paradigm of analysis of awe. Psychologists – often, but not only – adopted a phenomenological approach (Gallagher et al. 2015; Reinerman-Jones et al. 2013; Smith 1996, 2008; Smith et al. 2003) which described the process and the dimensions a *transformative* experience of awe is composed of (e.g., Gallagher et al. 2014, 2015; Pearsall 2007; Reinerman-Jones et al. 2013; Weger and Wagemann 2018).

Beyond the methodological approach, most studies agree that awe could stimulate connectedness among people, a mutual sense of belonging, an expansion of the sense of time (Bonner and Friedman 2011; Gallagher et al. 2015; Otto 1958), and other transcendence-related dimensions. Specifically, most researchers analyzed the transformative side of awe by framing up this **emotion** as a self-transcendent experience (e.g., Chirico and Yaden 2018; Nelson-Coffey et al. 2019; Stellar et al. 2017; Yaden et al. 2017) promoting a sense of small self and connection. These studies evidenced that awe can prompt people to look beyond mundane concerns and towards the universe, in which we look like no more than fine dust. Probably, by expanding the array of possible worlds, awe can *maximize* the possibility to **change**.

As a ripple in a pond, awe may act as a central node of transformation, by transcending current view of the world, thus maximizing the possibility to **change**. This entry started with the current psychological definition of awe, before summarizing main researches in this area. The transformative potential of this **emotion** as a self-transcendent **emotion** and a new perspective to frame up it in relation to a sense of possibility is proposed.

Research on Awe

Crafting a discourse on **emotions** is a privilege since it means describing and studying the most complex and pervasive phenomena orienting human behaviors, decisions, and relations in the subtlest way. Despite their strength, **emotions** remain fleeting phenomena fading away so soon that it is so hard to capture all their nuances.

Therefore, describing an **emotion** starting from its main reference scientific model could turn into a mere rhetoric practice. Instead, the lived experience of an **emotion** coming from its first experiencers could be a more effective source of information on it. It could be truer in the case of a complex and rare **emotion** such as awe. To provide a first glimpse into the rare but pervasive nature of this **emotion**, it could be suitable to choose two examples from the religious and the secular domains.

Regarding the religious domain, the conversion of St. Paul on the road to Damascus is considered as a prototypical case of “awe.” St. Paul realized that God was talking to him. First, he lost his sight. Then, he was filled with a sense of disorientation and sudden awareness that his entire life had been devoted to pursuing the wrong purpose. The loss of sight was the metaphor for the spiritual bankruptcy of the whole pre-Christian system. A further example of awe is depicted in the well-known book of Charles Dickens *A Christmas Carol* which describes the unexpected transformation of the miser Ebenezer Scrooge when he realized that the treasure of life was not money but people. It is not surprising that this **emotion** has accrued the interest of many scholars across years. However, unexpectedly, psychology has started devoting attention towards this **emotion** only 16 years ago, thanks to the seminal work of Keltner and Haidt published on the journal *Cognition and Emotion* in 2003 (p. 297). Authors described this **emotion** as process stemming from two core components deemed as main appraisal themes of this **emotion**:

- (i) *Vastness*: this dimension refers to the perception of stimuli as perceptually and conceptually vast. Therefore, both limitless natural views, as well as the grasping of a complex theory (e.g., the String Theory), could be potential elicitors of awe.
- (ii) *Need for accommodation*: the need to transform current mental frames according to new information.

However, it can be possible to introduce variations of these central appraisal themes, thus

giving forth other emotional states. Specifically, Keltner and Haidt identified other four additional emotional themes that can “flavour” (p. 304) the experience of awe, giving rise to different awe-related states:

- (i) *Threat*: awe is tinged with fear when it arises from something perceived as dangerous. This dimension borders on the feeling of *sublime*. According to Kant (1914, 1989), a key component of the sublime is facing a danger from a safe existential position. This negative dreadful nuance of awe was investigated by psychology only recently (Gordon et al. 2016), and results were promising, suggesting considering the sublime as a close instance of awe.
- (ii) *Beauty*: aesthetically beautiful inductors can dye awe with a sort of aesthetic pleasure. This component was considered as crucial in the field of psychological **aesthetics** (Konečni 2005, 2011, 2015; Schindler et al. 2017), and it has been often considered as close to the sublime (Konečni 2011). Konečni considered Aesthetic **awe** as the prototypical response to sublime *in-context* stimuli.
- (iii) *Ability*: the encounter with incredible instances of talent and ability, let the **emotion** of **awe** turn into the closer feeling of *admiration* for them (Onu et al. 2016).
- (iv) *Virtue*: when we meet examples of extraordinary morality, such as Gandhi, **awe** turns into the near emotional state of *elevation* (Haidt 2003; Shiota et al. 2017).
- (v) *Supernatural causality*: this is the least clear component of the model and the one which has been least investigated in psychology. Authors stated that this additional appraisal theme would appear when we are in front of something almost improbable if not **impossible**, such as the view of Goddesses. It is also possible to imagine many kinds of physical law violations (e.g., law of gravity) as conductive to this kind of **awe**-nuance.

Notably, these new appraisals can tinge **awe** with both positive and negative valence, which are not mutually exclusive but could coexist

(Chirico et al. 2017). In other words, the unusualness of **awe** as an **emotion** dwells on its natural flexible valence, which places it beyond the boundaries of conventional **emotion** models (Chirico et al. 2016) and asks for new and integrated methodological paradigms of analysis of **awe** (e.g., Nelson-Coffey et al. 2019). Consequently, both qualitative and quantitative approaches have been adopted to elucidate the nature of this complex **emotion**. To take stock of the increasing number of studies on **awe** and of the related methodologies, it is possible to identify two main approaches. On the one hand, researchers mainly relied on an experimental approach and looked at (i) peculiar mechanisms underlying this **emotion**, (ii) at its behavioral, (iii) physiological, (iv) neural correlates, as well as its (v) link with other cognitive or emotional processes. On the other hand, studies drawing more from a qualitative – mainly phenomenological – analysis of this **emotion** focused more on the dimensions of **awe** and the process of **change** it stems from (Stellar et al. 2017).

Both approaches evidenced that the transformative nature of **awe** realizes mainly by means of its two main self-transcendence properties, that is, a sense of being small in front of something transcending the self, i.e., the “small self” effect (Piff et al. 2015), and feeling connected, i.e., sense of connection, with the world and beyond (Nelson-Coffey et al. 2019; Saroglou et al. 2008; Stellar et al. 2017; Van Cappellen and Saroglou 2012; Van Cappellen et al. 2013; Yaden et al. 2016). Specifically, **awe** can relieve people’s concerns towards themselves and shift their attention from themselves to others (e.g., people and nature). Then, **awe** would promote a sense of deep connection with the surrounding (again, people or nature or the universe), thus repositioning individuals in their rightful place in the world. In the following, the self-transcendent nature of **awe** will be unpacked according to the phenomenological and the experimental approaches on this **emotion**.

At the level of studies adopting mainly a qualitative paradigm of analysis, the self-transcendent nature of **awe** emerged in terms of specific phenomenological dimensions. For instance,

Bonner and Friedman (2011) analyzed six interviews transcribed by Schneider in his book (2009) and evidenced that the most meaningful moments in life were marked by the presence of this **emotion**.

The phenomenological dimensions are detailed below.

- (i) “Profoundness”: **Awe** resulted as a profoundly meaningful experience.
- (ii) “Connectedness”: This self-transcendence-related dimension refers to a deep sense of mutual connection with something bigger than us.
- (iii) “Numinous”: It has been described in detail by Otto (1958) as an irrational dimension of religious experience. It arises from the perception of something holy and transcendent.
- (iv) “Fear”: It was less frequently reported.
- (v) “Vastness”: Both physical and conceptual sense of being in front of something bigger and larger than as. It is closely related to the sense of connection previously described.
- (vi) “Existential Awareness”: People in **awe** become suddenly aware of their existence in the world, by experiencing a sense of “presence” within the space and time they inhabited.
- (vii) “Openness and Acceptance”: People reported to be more open to others and to be more able to accept the death and human limits.
- (viii) “Ineffable Wonder”: Being in **awe** was like the mark of being alive, as a part of the mystery of life.
- (ix) “Presence”: **Awe** was experience as a “break” in life where people could focus on themselves and on important things.
- (x) “Heightened Perceptions”: People reported to be more respective. They perceived stimuli as more vivid and salient, as if they were transported to another level of reality.

To conclude, **awe** emerged as an experience able to make people transcend their current way to “stay” in the world, to look at it, and perceive it as well as other persons.

To use a technological metaphor drawn from **Virtual Reality** (VR), **awe** experience is close to when users chose to grasp a virtual object, and it takes one too many steps, thus going outside the area tracked by the VR device. Suddenly, it appears a grid to signal that user's movements are going too much beyond the virtual world. The simulated nature of the virtual world becomes salient and clear in that moment. The same happens with **awe**. **Awe** signals that we are going beyond and reminds users that there is always more, beside the simulation we have been accustomed to.

Probably, it is not by chance that, nowadays, **Virtual Reality** (VR) – 3D computer-generated environment in which the user can navigate and can manipulate (Riva and Waterworth 2003, 2014; Waterworth et al. 2010) – has resulted as one of the most effective methods to study the rare experience of **awe** within the limited spaces of a lab (Chirico et al. 2017). **Virtual Reality** provides researchers and people with the possibility to be immersed within a simulated world, which is completely manipulated and in which users' movements can be fully tracked along with their physiological parameters. Therefore, if Bonner and Friedman (2011) were able to exploit secondary data coming from spontaneous lived experiences of **awe** (Schneider 2009), experimental researchers cannot long for the same in the lab. To this end, experimental research has devoted effort not only to study **awe**-related effects in a controlled way in the lab but especially to improve the induction methodology of such complex **emotion**, in order to grasp its **transformative** potential for **cognition** and human change (Chirico et al. 2017; Chirico et al. 2018a, b, c; Chirico and Gaggioli 2018; Chirico and Yaden 2018; Chirico et al. 2016).

First, researchers focused on the use of *videos* and *images* to study **awe**'s self-transcendent nature. Several studies explored the pro-social function of **awe** as a proof of its self-transcendent essence (Akin et al. 2014; Bonner 2015) at the state and dispositional level (Li et al. 2019; Piff et al. 2015; Stegemoeller 2016; Stellar et al. 2017; Zhang et al. 2014). **Awe** served a pro-social function since it could enhance generosity and

supportive behaviors even towards unknown people (Prade and Saroglou 2016). Specifically, it has been shown that the experience of **awe** can promote pro-social attitudes as measured by the amount of money participants would give to others in donation tasks or by their willingness to help even unknown people in need (Prade and Saroglou 2016). Furthermore, **awe** would entail action tendencies and a shift of one's attention towards others (Stellar et al. 2017). This leads to a decreased sense of self-entitlement as measured by subsequent feelings of self-diminishment in front of **awe**-inducing stimuli, also known as the "small self" effect (Piff et al. 2015). Consequently, people in **awe** are more prone to take care of others' well-being, that is, to show pro-social tendencies. Moreover, a diminished sense of self turns into an enhanced feeling of humility (Stellar et al. 2018). Also, even negative or abstract forms of **awe** promote pro-social tendencies (Piff et al. 2015). This happened also when people share an experience of **awe**, that is, when they were told to be living this experience jointly with another person (Stegemoeller 2016). At the dispositional level, trait **awe** promoted pro-social behaviors not only in Western culture (i.e., USA and Europe) but also in East cultures, such as in China (Guan et al. 2019). Moreover, Zhao et al. (2018) demonstrated that **awe** makes people more generous not only towards other people but also to the natural environment. **Awe** would promote pro-environmental behaviors by attenuating people's dominance over nature, probably supporting a feeling of connection with it. Also, at the physiological and (Hu et al. 2017) neural level (Hu et al. 2019), it was showed that people tended to reduce attention to the self and devote more attentive resources towards others and the world during **awe**. All people in **awe** can feel relief from mundane affairs and thus pay less attention to materialistic pursuits such as money (Jiang et al. 2018); they are prompted to look beyond the immanent towards the transcendent. This approach would turn into a deeper meaning of life – i.e., lives are coherent, significant, and imbued with a feeling of transcendent aim (Snyder and Lopez 2009) – which would nurture an increased satisfaction towards life (Zhao et al. 2019).

This “openness” towards even unknown others emerged also at the cognitive and trait level. **Awe**’s cognitive impact is in line with Fredrickson’s (Fredrickson 1998) “broaden-and-build” theory on positive emotions. Fredrickson posits that positive emotions can expand our thought-action repertoire, a crucial asset for self-flourishing and survival (Shiota et al. 2017). **Awe** expands attentive focus (Sung and Yih 2015). Sung and Yih (2015) showed that even experimentally induced **awe** could expand our frames of reference to promote cognitive accommodation of the **complexity** of a stimulus. Crucially, **awe** *enlarged* people’s mental models more than other positive emotions, which are often considered as pivotal for knowledge acquisition, such as “interest” (Sung and Yih 2015). Moreover, **awe** makes people less swayed by persuasive messages because it prompts seeking more information against or in favor of proposed argumentations (Griskevicius et al. 2010). This aspect emerged also from the brief work of Valdesolo et al. (2016) showing that **awe** led (at least atheist) people to endorse more supernatural (vs. evolutionary) explanations beyond scientific explanations. At a trait level, **awe** was found to be positively correlated with extraversion and openness to experience personality traits (Shiota et al. 2006; Silvia et al. 2015). These studies evidenced that, **awe** “*expands*” people’s mental frames both in terms of *width* and *depth*. **Awe** prompts to look for new information outside our usual domains of interest and to deepen the existing ones, in order to achieve an innermost understanding of the world, of others, and ourselves. **Awe** expands our *possibilities* to see the world and surrounding to an extent that Valdesolo et al. (2017) indicated this **emotion** as one of the drivers of knowledge-restructuring or conceptual **change** process. **Awe** would be at the core of the process of science learning (Valdesolo et al. 2017). **Awe** motivates explanation-seeking as a function of the degree of **uncertainty** that is inborn in **awe** itself. Specifically, these authors speculate that **awe** arises from events violating our expectancies, showing a salient gap in our previous knowledge. **Awe** is responsible for a feeling of deep **uncertainty** and a subsequent desire to acquire more

information to avoid this feeling (Valdesolo et al. 2017). This urge is called “need for accommodation,” and it is also one of the two main appraisal themes at the base of **awe** (Keltner and Haidt 2003). It is the prompt to move from a knowledge-enriching process to a knowledge-restructuring one or cognitive **change**. The need for accommodation component has a proxy, that is, the feeling of **uncertainty**. People who were prone to live **awe** displayed also a more flexible way of thinking and were more able to manage **uncertainty** (Shiota et al. 2007). On the other hand, experimentally induced **awe** reduced participants’ ability to deal with **uncertainty** (Valdesolo and Graham 2014). **Awe** itself is a destabilizing **emotion** with a disruptive power to de-structure people’s mental frames. It may be possible to state that **awe** places people in a *liminality* zone (see Horvath et al. 2015 for a definition) conducive to **change**.

This aspect has been firstly captured and studied experimentally in a recent study on the effect of **awe** on *creative thinking*. Creative thinking can be defined as the ability to recombine ideas and to discover new links among them (Guilford 1950; Torrance 1969, 1974). In this study, **awe** was elicited by means of a *basic VR format, 360° videos*, and compared with a neutral **emotion** (Chirico et al. 2018c). Participants primed with **awe**-eliciting videos reported higher abilities to think in flexible, original, accurate ways after a single exposure compared to those who had watched neutral videos. Crucially, exposure to **awe** predicted increased creative thinking. In other words, VR-induced **awe** allowed demonstrating, for the first time, that **awe** can expand our perspectives towards the same objects, thus potentially amplifying our creative vein. Again, **awe** pushes beyond the fixed schema or accustomed view of the world and prompts to look over.

Conclusions

If transformation has a core moment, that can be **awe**, an **emotion** able to maximize the possibility to **change** by means of its self-transcendent nature. **Awe** makes people explore the impossible

and unpredictable because it prompts to go beyond current situations, schema, or frames of the world. This happens, as suggested by Gaggioli (2016), because **awe** would drag people into a deep **uncertainty** moment in which *assimilation* process failed, but *accommodation* has not successfully taken place yet. It is like a middle-suspended moment of extreme potential, in which everything might occur.

Differently said by Glăveanu (2018), **awe** can support a continuous engagement in “‘as if’, ‘what if’ and ‘if only’ thinking processes” (p. 519), to remind us of our nature which transcends the here and now and could aspire to more, to the yet impossible but, maybe, possible.

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Cognitive Versatility

Leonie Baldacchino

The Edward de Bono Institute for Creative Thinking and Innovation, University of Malta, Msida, Malta

Abstract

According to dual-process theories of cognition, human beings process information by means of two independent but interactive types of cognitive processes, namely: Type 1, which is rapid, non-conscious, and automatic, and produces intuition; and Type 2, which is slower, conscious, and controlled, and leads to analysis (Evans and Stanovich 2013). A key premise of dual-process theories is that Type 1 and Type 2 processes operate independently from and in parallel with each other, and may therefore co-occur at different levels. This has given rise to the notion of cognitive versatility, which refers to the extensive use of both intuition and analysis, together with the ability to switch between them as needed (Hodgkinson and Clarke 2007). This entry begins by outlining the evolution of research on human cognition and cognitive versatility, followed by an overview of the key features of intuition, analysis, and cognitive versatility including the main contextual

factors that are likely to shape their deployment. It concludes with suggestions on how these cognitive processes may lead to the discernment of possibilities and the estimation of probabilities.

Keywords

Intuition · Analysis · Cognitive versatility · Possibility · Probability

Introduction

According to dual-process theories of cognition, human beings process information by means of two independent but interactive types of cognitive processes, namely: Type 1, which is rapid, non-conscious, and automatic; and Type 2, which is slower, conscious, and controlled (Epstein 2003, 2010; Evans and Stanovich 2013). Type 1 encompasses various non-conscious cognitive processes, such as [heuristics](#) (mental shortcuts or rules of thumb: Gigerenzer 2008), ► [insight](#) (seeing the solution to a problem after a period of effortful reflection and/or non-conscious incubation: Sadler-Smith and Shefy 2004), and intuition (gut feelings, or “‘knowing’ without knowing why”: Hodgkinson et al. 2009, p. 279), while Type 2 incorporates a number of conscious cognitive processes, including critical thinking (objective

evaluation of an issue: Browne and Keeley 2014), and rational analysis (Evans and Stanovich 2013).

A key premise of dual-process theories is that Type 1 and Type 2 processes operate independently from, yet in parallel with each other. Notably, the two processing types are not in competition with each other, which implies that an increase in one does not take place at the expense of the other. In effect, Type 1 and Type 2 processes may co-occur at different levels, with such levels depending on contextual factors and individual differences. This has given rise to the notion of cognitive versatility, which refers to the extensive use of both intuition and analysis together with the ability to switch between them as needed, and which has been conceptualized as a cognitive style (personality trait / dispositional preference or inclination: Hodgkinson and Clarke 2007) as well as a cognitive strategy (actual use or processing in a given situation: Baldacchino 2013; Baldacchino et al. 2022).

This entry begins by outlining the evolution of research on human cognition and cognitive versatility, followed by an overview of the key features of intuition, analysis, and cognitive versatility including the main contextual factors that are likely to shape their deployment. It concludes with suggestions on how these cognitive processes may lead to the discernment of possibilities and the estimation of probabilities.

Evolution of Research on Cognition and Cognitive Versatility

Research on the evolution of human cognition indicates that the regions of the brain that give rise to intuition and other Type 1 processes evolved much earlier than those that generate analysis and other Type 2 processes (Evans and Stanovich 2013). Similarly, intuition was held in high esteem among laypersons long before analysis, with ancient societies hailing the former as “the most valuable kind of knowledge, . . . messages from the gods or evidence of . . . exceptional powers” (Noddings and Shore 1998, p. 4). The same cannot be said, however,

about research interest in intuition, because its spiritual and mystical connotations inhibited the scholarly community from attempting to study it scientifically, and led to a belief among researchers that intuition is an inferior cognitive process to rational analysis (Hodgkinson et al. 2008).

Consequently, cognitive theory was dominated until the 1970s by the notion of the “rational economic man” – or *homo economicus* – which posited that humans are rational beings who are capable of making decisions purely on the basis of conscious processes (Gibcus et al. 2008), and that intuition negatively influences cognition as it leads to irrational choices and behaviors (Peters et al. 2006). Over time, however, it became clear that it is not possible for humans to be entirely rational, as there are always limitations to the ability to engage in analytical processing. Rationality began to be viewed as “bounded” (Simon 2000) by constraints such as the availability of time and information. Furthermore, it became increasingly evident that nonconscious processes are often as pervasive as conscious ones in decision-making and behavior, and that research was required to shed light on the (nonconscious) processes which were at the time poorly understood (see chapter ► “Unconscious in Psychology”).

As a result, scholars gradually refocused their research from “cold” rational analysis to “hot” emotionally-charged processes including intuition (Böhm and Brun 2008; Peters et al. 2006). Indeed, as though in a bid to compensate for its neglect in research over the years, many studies focused on intuition to the exclusion of analysis. However, dual-process theories hold that intuition should not be studied in isolation but alongside analysis (Epstein 2003). The notion of cognitive versatility, which was proposed by Hodgkinson and Clarke (2007), is aligned with such views. So far it has received scant scholarly attention, but the few studies that have investigated cognitive versatility (Aggarwal and Molinaro 2013; Aggarwal et al. 2019; Baldacchino et al. 2022) indicate that it may be more effective than a dominant use of just one type of processing.

A Closer Look at Intuition, Analysis and Cognitive Versatility

Intuition is commonly referred to as gut feeling, and sometimes also as a sixth sense, that leads to “knowing” but without the ability to explain how or why that knowledge was attained (Hogarth 2001). The body of literature on intuition has led to various definitions and to the identification of a number of key features of this mode of processing. One of the most widely adopted definitions of intuition is as “affectively-charged judgments that arise through rapid, nonconscious, and holistic associations” (Dane and Pratt 2007, p. 40). This definition consolidates three elements of intuition that are found in many earlier definitions, namely that: (1) it is accompanied by affect, such as feelings of certitude or trepidation; (2) it occurs automatically and rapidly; (3) and it entails a pattern-matching process, often involving disparate pieces of information, which form into a coherent picture (Blume and Covin 2011). In addition to the above, Baldacchino et al. (2015) note that intuition is frequently associated with domain-specific experience, and they, therefore, suggest that this is a fourth key feature of intuition.

Due to the above features, intuition is more prevalent and effective than analysis in situations that are characterized by novelty, uncertainty, complexity, volatility, and time pressure, as well as in unstructured tasks that lack rules, guidelines, or information. In contrast, analysis, which may be defined as “the process of trying to understand a problem by breaking it down into its components and then performing logical and/or mathematical operations” (Klein 2004, p. 74), is predominant and more appropriate in stable contexts with sufficient, reliable information, clear rules and guidelines, and adequate amounts of time (Brigham et al. 2007; Burke and Miller 1999; Covin et al. 2001; Elbanna et al. 2010; Khatri and Ng 2000). Also in contrast with intuition, analysis (1) is not accompanied by affect, (2) is conscious, deliberate, and slow, (3) involves reasoning that is logical and linear, and (4) does not require domain-specific experience, such that novices are no less capable or likely than experts to engage in analytical processing.

As outlined above, dual-process theories hold that intuition and analysis may occur together, and the notion of cognitive versatility was introduced to refer to their abundant concurrent deployment. More specifically, Hodgkinson and Clarke (2007) proposed a four-quadrant framework, with intuition and analysis on perpendicular axes, and suggested that individuals may be classified into one of the four quadrants depending on the extent to which they engage in intuitive and/or analytical processing. They defined individuals who engage in high levels of analysis and low levels of intuition as “detail conscious,” those who engage in high levels of intuition and low levels of analysis as “big picture conscious,” those who do not engage in high levels of either type of processing as “non-discerning,” and those who “possess in equal abundance the inclination to attend to analytic detail *and* cut through that detail,” together with an ability “to switch more readily between analytic and intuitive processing” (p. 247) as “cognitively versatile.”

Hodgkinson and Clarke’s (2007) framework referred to cognitive style, which represents an individual’s dispositional preference for intuition or analysis, but more recent work (Baldacchino 2013; Baldacchino et al. 2022) adopted it to study cognitive strategy, which refers to the actual use of intuition and analysis in particular situations (Hodgkinson and Clarke 2007). Cognitive strategy may be shaped by cognitive style as well as by the nature of the task at hand, such as the amount of information and time available (Baldacchino 2019).

Although cognitive style (as a personality trait) is relatively stable, individuals who are not naturally cognitively versatile may still learn to overcome their dispositional preference for either intuition or analysis in order to become more cognitively versatile and employ the cognitive strategy (i.e., process/es) that is most appropriate in a given situation (Baldacchino 2019). To illustrate this point, one may consider ambidexterity as a metaphor for cognitive versatility: Although most people are either right-handed or left-handed and would prefer to carry out most actions using their dominant hand, they are able to use their non-dominant hand for a wide variety of tasks,

particularly (but not exclusively) those that require the use of both hands, such as driving a manual transmission automobile or using a fork and knife at the table. Moreover, although challenging, it is possible to use the non-dominant hand to perform actions that are normally done with the dominant hand, such as if the task context changes (e.g., if one is accustomed to right-hand drive cars and is required to switch to a left-hand drive one), or in the case of an injury to the dominant hand.

Cognitive Strategy, Possibility, and Probability

In simple terms, possibility refers to a chance that something may occur, that is, whether something could happen or not, whereas probability refers to the likelihood that it will occur, that is, the level of possibility that something shall happen (Cambridge Dictionary 2021a, b). The above-mentioned properties of intuition and analysis, together with the extant literature on cognitive versatility, suggest that these cognitive processes, styles, and strategies may play different roles in the discernment of possibilities and estimation of probabilities. To the extent that entrepreneurial opportunities may be defined as “the possibility to do things both differently from and better than how they are being done at the moment” (Wickham 2006, p. 236), and that opportunity exploitation decisions entail an (implicit or explicit) appraisal of their likelihood of success, the following research in the ► [entrepreneurship](#) domain may be drawn upon to support the above claim: Intuition and cognitive versatility have been found to be positively associated with opportunity identification (Baldacchino 2013; Baldacchino et al. 2013, 2014), while intuition and analysis were both found to be involved (in different ways) in opportunity exploitation decisions (Baldacchino and Boffa 2021).

Adopting Hodgkinson and Clarke’s (2007) terminology and a cognitive strategy lens, it could be argued that detail-conscious, big picture conscious, and cognitively versatile strategies would be more or less appropriate for thinking about

possibilities and probabilities depending on the nature of the task, along the lines described in the previous section (above) with respect to situational factors that would warrant intuition and/or analysis. Two key factors are the availability of information and time, as suggested below.

Where both information and time are abundant, engaging in slow, deliberate analysis of the information would enable a conscious generation of possibilities, together with an estimation of their probability using logical reasoning and mathematical formulae. Hence, when there is plenty of data to analyze and sufficient time to do so, a detail-conscious strategy would likely be appropriate.

Where information is abundant but time is limited, it would not be possible to engage in slow, deliberate analysis of the information. In such cases, intuition would enable a rapid visualization of possibilities, as well as a gut feeling about the probability or likelihood that they shall occur. Thus, when data is available but there is no time to analyze it, a big picture conscious strategy would likely be appropriate.

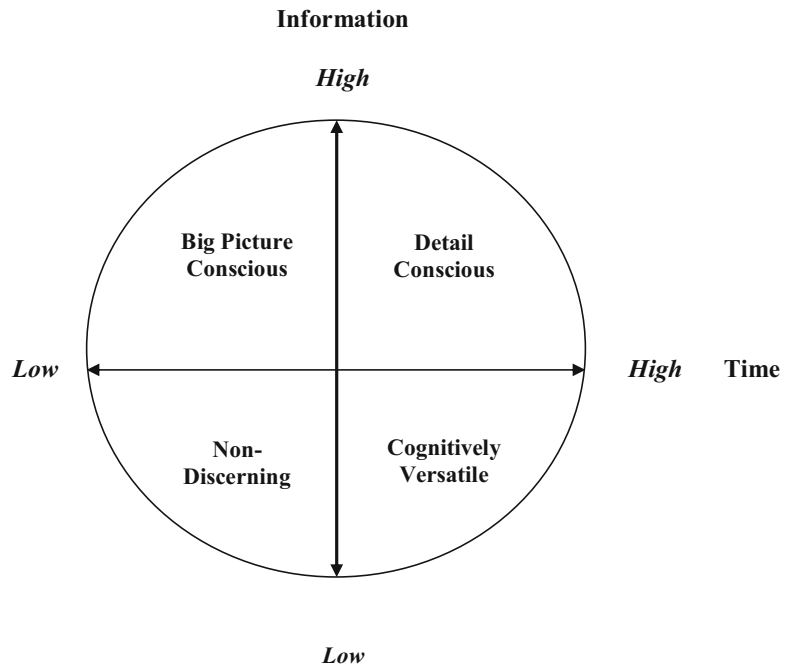
On the other hand, where information is limited but there are no time constraints, both intuition and analysis may come into play. Intuition could help fill in the gaps (Crossan et al. 1999) in the limited information to enable a visualization of possibilities, and could generate instant gut feelings regarding their probability. Given the availability of time, the analytical system could also be activated to analyze whatever information is present to consciously generate possibilities, which could then be subjected to an analytical estimation of their probability. The intuitively generated possibilities and probabilities could also be subjected to analysis, if time permits. Thus, when data is limited but time is not restricted, a cognitively versatile strategy would likely be appropriate.

When both information and time are limited, neither intuition nor analysis is likely to be activated. There could still be guesses about possibilities and probabilities, but such a cognitive strategy would be non-discerning as it would not be based on intuitive or analytical processing.

The above four conditions are mapped out on an adaptation of Hodgkinson and Clarke’s (2007)

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Fig. 1 Cognitive styles/strategies in relation to possibilities and probabilities (Adapted from Hodgkinson and Clarke 2007, p. 246)



framework in Fig. 1 below, in which the intuition and analysis axes are replaced by time and information. However, research is required to explore these proposed relationships.

► [Insight](#)

► [Unconscious in Psychology](#)

Summary/Conclusion

As stated by Glaveanu (2018), “most of the times we think about the possible what we actually consider are possible futures” (p. 524). This entry has suggested that such considerations are likely to stem from both intuition and analysis, as what is ultimately enacted depends on individuals’ appraisal of situations, which in turn may involve intuitive and/or analytical processing, depending on the nature of the task/situation, and individual differences. Cognitive versatility is therefore the most effective style and strategy for thinking about possibilities and probabilities, as it enables individuals to make the best use of both intuition and analysis.

Cross-References

► [Entrepreneurship](#)

► [Heuristics](#)

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Coincidence

Bernard D. Beitman

Department of Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA, USA

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Definitions

A coincidence is a remarkable coming together of two or more incidents without an obvious causal connection between them (Beitman 2021). The word coincidence attracts two kinds of adjectives. One group implies no cause. These include: *coincidental*, *mere*, *only*, *pure*, *true*, *sheer*, and *just*. The other group implies that there might be a cause: *meaningful*, *remarkable*, and *amazing*. Throughout human existence the mystery of coincidences with the possibility of discoverable causes has fueled human curiosity. Coincidences can offer clues to how reality works (Johansen and Osman 2015) because they are hints of explanations not yet considered.

The nineteenth-century philologist H.E. Shepherd traced the origins of the words *coincide* and *coincidence*. He suggests that they probably began in Medieval Latin and then passed into the vocabulary of scholarly English writers during the first half of the seventeenth century, before probably being taken up by mathematicians during the great revival of mathematical study at that time in England. The words seemed to come into English through philosophy, having been translated from Roger Bacon's Latin or from the Latin of some other philosophical writer (Shepherd 1880).

The word *coincidence* became a household word in American English following the

simultaneous deaths of Thomas Jefferson and John Adams on July 4, 1826. The pair died exactly 50 years after each had signed the United States Declaration of Independence (Shepherd 1880). They died in different places, Jefferson in Charlottesville, Virginia and Adams in Quincy, Massachusetts. The US president at that time was Adams's son John Quincy who called the coincidence of their deaths on the nation's anniversary "visible and palpable remarks of Divine Favor" (Meacham 2012, p. 496).

Three primary categories of meaningful coincidences. Meaningful coincidences are characterized by some degree of similarity between or among the events. In the rest of this entry, the word coincidence is a shortened version of meaningful coincidence. The three primary categories of coincidences include: synchronicity, serendipity, and simulpathity.

Synchronicity: Carl Jung was doing psychotherapy with a woman who was resisting his attempts to help her change. One day she described a dream about a golden scarab. Jung then heard a tapping sound at the window. He got up, opened the window, and found a scarab-like beetle. "Here is your scarab," he said to her. The coincidence startled her into the direction of change (Jung 2010). This story has become best known example of synchronicity.

Jung (2010) stimulated imagination about meaningful coincidences with his ideas about synchronicity as an acausal connecting principle. Acausal connections involve mechanisms different from cause leading to effect. He was influenced by Chinese thought, especially the I Ching; medieval mysticism; the parapsychological research of J.B. Rhine (1947); and the theory of seriality as proposed by Viennese biologist Paul Kammerer (Townley and Schmidt 1994).

Jung invented this term, which means falling together in time, to explain meaningful coincidences. Synchronicity, as an acausal connecting principle, suggests that the shared meaning between two low probability events had something to do with explaining why they happened. The word has become synonymous with

meaningful coincidences. Jung's descriptive definition of the meaningful coincidences explained by the synchronicity principle includes two different aspects – psi-based coincidences (telepathy, clairvoyance, and precognition) and coincidences that facilitate individuation, the process of spiritual and psychological development (Jung 1973). The famous scarab story described in the next section represents the individuation form.

Serendipity: These are happy accidents. In 1921 microbiologist Alexander Fleming noticed that his accidental nasal drippings on the bacteria growing in a Petri dish in his lab created a halo of inhibition around the bacterial colony. In 1929 he noticed the same halo of inhibition in another Petri dish caused by the ooze from penicillin mold that had accidentally landed on the dish from another lab while he was on vacation. Through a series of further coincidences, that “mold juice” was manufactured in huge quantities to help save the lives of soldiers and others during World War II (Merton and Barber 2004).

Horace Walpole, a member of the British House of Commons in the eighteenth century, recognized in himself a talent for finding what he needed just when he needed it. Walpole first coined the term serendipity in a letter to his friend and distant cousin Horace Mann, the British minister in Florence, Italy, on January 28, 1754 (Merton and Barber 2004).

Walpole based the word on a fairy tale entitled “The Travels and Adventures of Three Princes of Serendip.” Serendip is an ancient name for the island nation Sri Lanka off India's southern coast. The king of the fable recognized that education requires more than learning from books, so he sent his sons out of the country to broaden their experience. Throughout the story, the clever princes carefully observed their surroundings and then used their knowledge in ways that saved them from danger and death (Merton and Barber 2004).

Serendipity relies on the intersection wisdom and chance to accidentally find something of interest or value. The intentions behind the activity taking place at the time of the unexpected observation or event are only indirectly related

to the outcome (Copeland 2019). There are two variations: (1) looking for something and finding it in an unexpected way and (2) looking for something and finding something entirely different and very useful. Fleming's discovery of penicillin, described in the next section, is an example of looking for something and finding it in an unexpected way.

Seriality: The phenomenon of seriality differs from serendipity and synchronicity in that it is a series of events in the objective world that the mind takes note of and remembers. Unlike the others, there is not necessarily a special subjective element. The series of events could theoretically be verified by anyone.

No one has perhaps described strings of similar events more thoroughly than Austrian biologist Paul Kammerer. He spent hours sitting on benches in various public parks, noting the people who passed by, classifying them by sex, age, dress, whether they carried umbrellas or parcels, and so on. He did the same during the long train rides from his home to his office in Vienna.

Kammerer defined “seriality” as “a recurrence of the same or similar things or events in time and space” that “are not connected by the same acting cause.” (This statement is a precursor of Jung's synchronicity principle.) However, Kammerer viewed these repetitions as simply natural phenomena.

In his 1919 book *Das Gesetz Der Serie* (The Law of Series), Kammerer outlined these laws and provided a broad set of classifications of serial types and qualities. This work on seriality helped Jung develop his concept of synchronicity. Afterwards Jung used a definition for synchronicity that was similar to Kammerer's definition of seriality. But Kammerer attributed the confluence of events to influences he thought were within the realm of known science (Kammerer 1919), while Jung relied on explanations outside known causal principles. Jung emphasized personal meaning, while Kammerer did not. Nevertheless, a series of improbable parallel events can seem quite meaningful. Meaningful series may take the form of a repeated phrase, seeing the same person in different contexts, or references to the same movie or book.

Simulpathity: At 11 pm on February 26, 1973, I was standing over the sink in a San Francisco Victorian house kitchen choking uncontrollably. I had never choked like that before and have not since. The next day, my brother told me that my father was choking and dying on his own blood at 2 am in Delaware on the east coast, the same time, 3000 miles away, I was choking in San Francisco. To bring the simultaneous choking into yet sharper perspective, my father died on February 27th which is my birthday (Beitman 2016b).

I coined this term to signify emotional/physical and usually subconscious empathy at a distance. The two people are not in the same place. One person feels some form of suffering of the other person. Only later is the simultaneity of the distress recognized (Beitman 2016b).

The Anatomy of a Meaningful Coincidence

Each coincidence has three major features: timeliness, similarity, and improbability. In this discussion, the word *coincidence* implies *meaningful coincidence* (Beitman 2022).

The time span between incidents can vary from a few seconds to years. The scarab and the choking involved small time intervals. Fleming and the discovery of penicillin took 8 years to manifest.

Some incident pairs are exact matches. More often they approximate each other. The scarab in the dream was not exactly the same as the scarab-like beetle that Jung captured and placed in front of the dreamer. Fleming's halos of inhibition were probably more similar than identical to each other. And I was not choking on my own blood as my father was.

A coincidence is an unlikely event with a probability that is currently difficult to calculate. While there is debate about how well people judge coincidence probability (Diaconis and Mosteller 1989; Johansen and Osman 2015), the lower the estimated probability, the less likely the coincidence can be explained conventionally.

Mind and Object

Coincidences are formed from two kinds of incidents: **Mind** and **Object**. **Mind** incidents are thoughts, feelings, sensations, and images. No one else can observe them. **Object** incidents are things and events that anyone could observe.

Mind-Object is currently the most common coincidence form. The coincider (the person experiencing the coincidence) thinks, imagines, or feels something that is paralleled in a thing or event outside of their mind. The Object in Mind-Object takes several forms; it can be another person, information, a thing, a mirrored psychological conflict, or a predicted future event that comes true. A common example is thinking of someone you have not thought of for a long time and that person unexpectedly contacts you (Coleman and Beitman 2009).

Mind-Mind refers to thoughts, feelings, or images that two people share and that can only be known when one reports them to the other or to an intermediary. They include telepathy and simulpathity events. Twins, especially identical twins, seem to experience the highest frequency of mind-mind coincidences. They show strong psychological as well as strong physical parallels both at a distance and in the same place (Playfair 2012). In addition to twins, other pairs of people who share a strong emotional bond, including mother-child and close friends, also are likely to experience Mind-Mind coincidences (Stevenson 1970).

Object-Object coincidences involve a series of two or more things, symbols, numbers, words, and other visible or auditory forms, each of which is similar to the other(s) in the series. These are public events that anyone present can witness. A prominent example is the simultaneous deaths of Thomas Jefferson and John Adams, both on July 4, 1826, 50 years after each had signed the declaration of independence.

Explanations

The most popular explanation for coincidences is that God or "the Universe" is responsible (e.g.,

Rushnell 2006). There is no arguing against the First Cause since, to people of strong religious faith, God brought everything into existence and continues to do so including every coincidence. The second most popular explanation for coincidences is randomness, that there is a probability that any event, however improbable, can happen (e.g., Hand 2015). The notion of Personal Agency, that the person or people involved contribute to the creation of the coincidence, is a third often neglected explanation. Also neglected is the recognition that multiple forces help to produce coincidences. Indeed, most attempts to explain a coincidence assume that one explanation works for all coincidences.

Probability/Random

All coincidences have a probability of happening. This characteristic, however, does not serve as a full explanation. By analogy, each human being has a mother. However, mothering cannot explain all human behavior. For both coincidences and mothering other variables contribute to explanations.

Statisticians claim that in large populations any strange thing can happen – they call this the Law of Very Large Numbers (Hand 2015). The Law of Very Large Numbers has not been proven the way the law of gravity has. Nor has it been proven in the way that mathematicians *prove* certain statements. The similar sounding Law of Large Numbers has been proven both mathematically and experimentally. The differences between the two laws illustrate the problems with the Law of Very Large Numbers. Indeed some writers confuse the two by saying The Law of Large Numbers when they actually mean the Law of Very Large Numbers. The Law of Large numbers states that “As a sample size grows, its mean gets closer to the average of the whole population” (Dinov et al. 2017). For example, the more times a coin is flipped, the closer the average of heads and tails comes to the theoretical average of $\frac{1}{2}$ or 50% each. Or, the more times a true die is rolled, the closer the appearance of each number comes to $\frac{1}{6}$ or 16 2/3%. It is a law like the law of gravity by

being a fundamental aspect of our reality. On the other hand, the Law of Very Large Numbers has not been proven experimentally and cannot be proven through a mathematical proof. Instead this “law” is a belief. Stating the belief that in large populations any strange thing can happen as a “law” obscures the subjective nature of the claim. The Law of Very Large Numbers resembles the laws made by governments rather than those lawful regularities discovered by science.

Statisticians recommend calculating probabilities of coincidences by multiplying the base rates of each incident. A base rate is the frequency at which an incident occurs. If one person thinks of another person and that person texts her, the base rates could be calculated by knowing (1) how often the first person thinks of the other person and (2) how frequently the other person texts the first person. But this calculation ignores the time span between the thought and the text. The closer in time of this coincidence, the lower the probability. From the simple base rate calculation a coincidence occurring 1 min apart and one occurring a week apart would have the same probability. Statisticians do not include time span in their calculations of the probability (Hand 2015). But time span does influence probability and should be included in most (but not all) probability calculations. The discovery of penicillin, for example, took 8 years between the first and second incident. Degree of similarity between and among the events should also figure into the probability. The greater the similarity between events, the lower the probability. How to include time span and similarity in probability calculations has yet to be clarified.

Because there is no accepted scientific theory other than randomness to explain how coincidences happen, conventional scientists reject further study of coincidences, except to criticize other explanations (Lewis 2020).

Personal Agency

Some minds are inclined toward seeing coincidences and some are not; in other words *bias*. For those who are predisposed, the *recency/availability*

bias allows them to use recent events to match a current event. The *hindsight bias* can encourage an excessive retrospective increase in the significance of a coincidence (Hand 2014). However, the hindsight bias also is pragmatically useful. Serendipitous discoveries in science are recognized through hindsight when their value becomes evident. The value of penicillin was not recognized until many years after it was discovered (Copeland 2016).

Once beliefs are established, minds are reluctant to let go of them. Instead they seek information that confirms their correctness – *confirmation bias*. Since similarity between two events is fundamental to coincidences, the desire to confirm this similarity can excessively stretch the pattern of one event to match the pattern of another event to confirm the established belief.

Self-defined spiritual and religious people see more coincidences as do *self-referential* people who tend to see events around them as related to themselves. Others who are more likely to notice coincidence include those *seeking meaning in life* and people who are *highly intuitive* (Costin et al. 2011; Attig et al. 2011; Coleman and Beitman 2009). The Weird Coincidence Survey, which estimates personal coincidence sensitivity, was used to determine these characteristics (Coleman and Beitman 2009). (The Weird Coincidence Survey may be taken at Coincider.com.)

Situational Variables

Situational variables play key roles in the likelihood that coincidences will take place. These include need, life stressors, and high emotion (Beitman 2016b).

When in *need*, a person may consciously or unconsciously scan the environment for potential sources of help, increasing the potential connections between mental events and environmental events (Mind-Object coincidences) (Duggan 2020).

Life stressors involve the passing from one role to another, a change in mental or physical state, or the transition from one life stage to another one. They include weddings, deaths, births, job changes, sickness, and relationship changes. On

the scale of 1–100, death of a spouse ranks the highest at 100. A comprehensive list of life stressors is found in the Holmes-Rahe Stress Inventory (Noone 2017). Life stressors pull people out of their ordinarily structured lives which open up possibilities for new connections.

High emotion increases the mind's drive to make connections with other minds and objects in the environment. The high emotion can be positive or negative. But if the emotion is too strong, it can obscure recognizing potential coincidences (Allsop and Gray 2014).

Conventional Science

Recognized brain and mind capacities can explain some coincidences.

Ocular saccades. Not uncommonly, people report that when they glance at clocks the same number seems to show up in their line of sight. They may glance at wall clocks, car clocks, or computer screens and see 11:11 and wonder why they are seeing the same numbers. Ocular saccades are rapid, ballistic movements of the eyes that abruptly change the point of fixation. They range in amplitude from the small movements made while reading, for example, to the much larger movements made while gazing around a room (Purves et al. 2001). Through these eye movements a person may have subconsciously noticed that their timepiece is registering this number again so they looked. Since they did not recognize the number consciously, the series of time coincidences appears to have no obvious cause.

Similarly, *supersensitive hearing* may produce subconsciously tracked events that are matched with a conscious event leading to an unexpected coincidence. A caller into a radio show on which I was being interviewed told this story: Walking down a street, the man felt the impulse to rush ahead and grab two small children playing under a tree. Just as he swept them away, a large tree branch fell right where they were playing. The most likely explanation for his action is that he heard the cracking of the branch that was about to fall.

Concordance refers to people who know each other well and who are then likely to be coincidentally thinking the same things at the same time and finishing each other's sentences (Blackmore and Chamberlain 1993). It appears to be telepathy but could be strong familiarity.

Resolving psychological conflicts. Outside of their awareness, people are able to create coincidences to resolve inner conflicts (Williams 2015). One of the participants in my Weird Coincidence Survey research at the University of Missouri-Columbia (Coleman and Beitman 2009) reported this story: "After I was widowed, I began dating again. I was concerned with what my late husband would think. One day while visiting his grave, I accidentally cut my ring finger with some grass clippers. I had to go to the Emergency Department, where they removed my wedding ring. My boyfriend and I took it as a sort of sign that it was okay to proceed in our relationship." To an outside observer the coincidence can be explained by the actions of the coincider. By attributing the cause to mystery, personal responsibility is removed, which fosters the feeling of being guided and cared for.

Group contributions. Coincidences often involve other people, yet their contributions are regularly not recognized. No scientific discovery, for example, occurs in isolation from the scientific community. The agency of an individual within that community (whether at the time or even posthumously) is what determines how and whether their observations are taken up into a process of discovery by that community. Serendipitous discoveries in science cannot be fully described in terms of a single individual at a particular time or place. Rather, facts about the context and culture determine the perceived value of the discovery (Copeland 2015).

Emerging Scientific Theories

Conventional science can explain a limited number of coincidences. New theories are emerging that have the potential to widen our range of understanding of how coincidences happen.

Complexity and Chaos Theories

Emergent properties characterize complex and chaotic systems. An emergent property can be described as novel in the sense that it cannot be reduced to the properties that exist in the underlying process or context from which it arose (Clayton 2006). A popular example is the idea that consciousness "emerges" from the neural networks of the brain.

Jungian Psychologist Joe Cambray (2011) suggests that complexity theory could add to further understanding of synchronicity theory. Cambray believes the fluid state between order and disorder that characterizes complex system is filled with creative potential, yet is also potentially dangerous. Too much chaos may lead to psychotic thinking. Structure grounds emerging creativity. Too much structure leads to rigidity since emergence requires flexibility in a system to reconfigure. As Robert Frost wrote "You have freedom when you're easy in your harness." To Cambray this fluid state also gives birth to synchronicities. Complex systems can exhibit self-organization – the system spontaneously orders itself without external control. The emergent property of self-organization may result in synchronicity (Cambray 2002).

Philosopher Samantha Copeland (2019) suggests that the serendipity in scientific discovery also emerges from the fluid state between structure of wisdom, skill, and knowledge and the unpredictability of chance, luck, and randomness.

Psychologist Robert Sacco (2018) investigates the relationship between fractal symmetry and synchronicity. He uses birthdate as the temporal location to predict fractal correlations later in life. While exact fractals are built by repeating a pattern at different sizes, synchronicities are related to "statistical" fractals that introduce randomness into their construction so that the elements of the coincidence are not exact repetitions. These repetitions can then be paired to form coincidences since individual fractals are similar at different levels of scale. Sacco proposes that because chaos can create fractals, chaos theory can help explain some synchronicities.

Chaotic systems can produce fractals which are selfsame (the same as previous) repeating patterns that could become Object-Object coincidences (Sacco 2020).

Complex and chaotic systems are nonlinear, dynamical systems.

A dynamical system is a system whose state (and variables) evolve over time, doing so according to some rule. How a system evolves over time depends both on this rule and on its initial conditions – that is, the system’s state at some initial time. Feeding this initial state into the rules generates a solution. . . which explains how the system will change over time; chaos is generated by feeding solutions back into the rule as a new initial condition. In this way, it is possible to say what state the system will be in at a particular time in the future. (Rickles et al. 2007).

A small change in some variable can result in a large change in the system yielding either a predictable outcome or a potentially random outcome making outcomes sometimes difficult to predict (Rickles et al. 2007). Building on the unpredictable factor in deciding a career, some career counselors encourage their clients to rely on serendipity to advance their careers (Pryor and Bright 2007).

Chaotic systems generate intricate behavior from the repeated application of a simple, mathematical rule. Complex systems generate intricate behavior from simple interactions between large numbers of subunits that feedback into the behavior of the parts.

The link between emergent properties of complexity theory and the fractals of chaos theory may have to do with the relation between quantum theory and nonlinear dynamical systems (Sacco 2020).

Potential Scientific Explanations

Although stubbornly rejected by conventional science, psi offers partial explanations for a subset of coincidences. The observations from the micro-worlds of quantum mechanics are speculated to take place in the macro-world of ordinary human living. That our minds are embedded in a Greater Consciousness emerges as another speculative explanation for some coincidences.

Psi

Most prominent among potential explanations that are not currently accepted by science involve psi or ESP processes since many coincidences can be easily ascribed to telepathy, clairvoyance, or precognition. Indeed Jung’s classification of meaningful coincidences included examples of each of these. Research into telepathy, clairvoyance, and precognition has yielded numerous case reports and large numbers of well-designed laboratory research studies. Parapsychology research, which includes psi, drew a strong, positive review in *The American Psychologist*, a prominent American science journal (Cardena 2018). Psi abilities have been catalogued across the world’s religions, each tradition having stories about people with extraordinary abilities (Irvine 2008). But no one knows how psi works, so many authors have criticized psi research (Shermer 2003; Hand 2014) and will continue to do so until mechanisms to explain telepathy, clairvoyance, and precognition are established.

One possible partial mechanism is Psi Mediated Instrumental Response (PMIR), first proposed by St. John’s University psychologist Rex Stanford. Individuals may unconsciously obtain extrasensory knowledge of events relevant to their personal needs and use this knowledge to modify their behavior in a way that can be helpful (instrumental) in satisfying those needs. Of the dozen items on the Weird Coincidence Survey, this response was in the top four: “I advance in my work/career/education by being in the right place at the right time.” Somehow people get where they need to be at the right time. A substantial body of research by Stanford supports the existence of PMIR (Stanford and Stio 1976; Stanford et al. 1975; Palmer 1997; Duggan 2020).

I have given the Stanford acronym PMIR a friendlier face; I call it Human GPS – the ability to get where you need to be without knowing how to get there. Being in the right place at the right time happens often but subconsciously. The mere act of randomly choosing a seat in a movie theater, arriving late for an appointment, following an intuitive nudge, or getting lost in a car can yield serendipitous results.

Some meaningful coincidences seem to escape the psi explanation net. What are we to make of them? The ones that seem unexplainable beckon curiosity and investigation. Their mystery someday may be elucidated.

Skeptic Michael Shermer makes his living debunking ideas like psi (Shermer 2003) yet he was confronted with a meaningful coincidence that he could not explain. As he reported in *Scientific American*, he was about to be married in his home when a long silent radio belonging to the deceased grandfather of his bride began playing romantic songs. She had wanted her dearly beloved grandfather to be present and to her the radio brought him to her. After the ceremony was completed, the radio went silent once again and years later was silent still (Shermer 2014). Shermer rejects the notion that this was a form of communication from her deceased grandfather; he also dismisses the possibility that his bride so wanted her grandfather to be there that she unconsciously caused the radio to turn on. Both these are parapsychologist explanations. Shermer prefers a “natural science” explanation that suggests the grandfather “exists in a 5th dimensional tesseract and is using gravitational waves to turn on his old radio for his granddaughter” (Shermer 2018). Shermer’s explanation may be even more speculative than any parapsychological explanation.

Quantum Mechanics

The application of quantum mechanics seems to promise help in solving some of the explanatory mysteries of coincidences.

In quantum mechanics, the activity of electrons, photons, and smaller particles has catapulted two captivating ideas into common awareness – quantum entanglement and the collapse of the wave function.

For *quantum entanglement* to occur two particles like electrons or photons must be so closely linked that one cannot be defined without reference to the other. Then a change in a characteristic of one particle is instantly paralleled by an equal and opposite change in the other particle, no matter what the distance between them (Orzel 2017). Entanglement has become a metaphor for telepathy and simlupathity occurring between two

“entangled” individuals (Beitman 2016b). Whether this is more than a metaphor remains to be seen. Physicists are bringing entanglement to large systems, including clouds of atoms, quantum drums, wires, and etched silicon chips entangling large and larger systems (Ornes 2019). Where the micro- to macro-limit exists is yet to be determined.

Collapse of the wave function refers to the particle-wave duality – the particle and the wave complement each other as two aspects of what may be the same thing. An unmeasured wave of a photon or electron can be in many different possible particle states. When the wave is measured (observed), one of the possible particle states becomes real. At the macro-level, by a huge stretch of the imagination, a strong need could create coincidences by acting like the observation of a particle so that the need “collapses” a band of possibilities, analogous to collapsing the wave of possibilities into a particle state, from the person’s reality into the desired state. The application of quantum particle activities to the macro human world needs much further substantiation.

Greater Mind

Jung theorized that mind and object each emerges from an undifferentiated whole, the *unus mundus*, which somehow “contains” archetypes which are enduring patterns of human thought and action. Archetypes are somehow constellated (activated) which then brings the mental together with the physical, thereby creating Mind-Object coincidences (Jung 1977). Quantum physicist Niels Bohr stated that “materialism and spiritualism [that is, the physical and the psychic] . . . are two aspects of the same thing” (Honner 1988). Physicist David Bohm (1980) argued that the physical world that we see (the “explicate order”) first exists as a potentiality in an unseen, undivided whole (the “implicate order”). When something appears in the material world, it has unfolded from the implicate order, and when it disappears from the material world, it enfolds back into the implicate order. Bohm and physicist F. David Peat have suggested that both mind and matter emerge from the implicate order, and are thus inseparable (Bohm 1980; Peat 1987, 2014). Kastrop (2019)

makes similar claims. Barušs and Mossbridge (2017) argue that synchronicities occur when structures within deep consciousness extrude into our ordinary waking state.

The sheer number of similar speculations by respected researchers about an implicate order suggests this might be a fruitful avenue of investigation.

Coincidence and the Possible

Coincidences encourage meta-positions vis-à-vis reality. By stimulating curiosity about personal meaning and possible explanations, coincidences activate the self-observer. The self-observer can connect emotions, intuition, thoughts, and images to events in the environment, including ideas in the minds of other people (Deikman 1982). To notice a coincidence usually involves simultaneously holding in mind two or more separate events. As they are being held in mind, the self-observer can examine their similarity, probability, emotional charge, and meaning.

From this meta-position, reality, experienced both subjectively and objectively, can continually be re-imagined. Since interpretation of coincidences relies on both intuition and rationality, these two relatively distinct information processing modes can come increasingly more able to function together.

Since explanations of coincidences often involve multiple influences, understanding coincidences requires practice in thinking simultaneously about multiple possibilities. At minimum, these multiple explanations include probability, brain function, personal agency, situational variables, and group influences, while also recognizing that the future holds explanations yet to be discovered and substantiated.

Because Mind-Object coincidences hint at closer connections between mental events and environmental events, coincidences challenge the standard assumption that mind is contained solely within the brain. As the reality of Mind-Mind coincidences becomes recognized, the implicit barriers between and among minds may possibly become less definitive. If two people are

thinking or feeling the something similar around the same time, their minds appear to be more closely connected that is conventionally considered. Thinking something and then having it happen is also a common coincidence form. Increasing evidence suggests that human minds may be emerging as nodes in Internet-mind connectivity. These connections go beyond programs that feed Internet users ideas in which they have expressed on-line interest (Beitman 2016a).

The Usefulness of Coincidences

The attractiveness of coincidences for exploring new frontiers is generated in part by their usefulness. Their usefulness calls attention to them. In the future people may increasingly and deliberately employ coincidences in a broader range of human activities than which they are currently being used.

Coincidences can be useful in most aspects of personal life: romance, family, friends, psychological change, sickness, jobs, and spirituality (Hopcke 1998; Beitman 2016b; Rawlette 2019). Classroom teachers can benefit from considering that their minds and the minds of their students may have parallel thoughts and feelings (Bache 2008).

Science and technology have advanced quietly on the wings of serendipity, often resulting in Nobel Prizes (Austin 2003; Van Andel 1994; Merton and Barber 2004; Meyers 2007). Should funders finally acknowledge the value of these happy accidents, the future will likely see exponential growth in practical new ideas stimulated by serendipity (Yaqub 2017).

Leadership in business organizations is beginning to benefit from synchronicity awareness and use (Jaworski 2011). Possibilities for expanded applications are being explored.

Coincidences can and do propel the plots of narrative fiction; many fairy tales, novels, movies, and plays turn on meaningful coincidences. No coincidence, no story (Dannenberg 2004; Browne 2019)! Recognition by readers and audiences of narrative coincidences, through coincidence film festivals for example, can sharpen the public mind to their ubiquity. The audience can be asked to spot the coincidence! Activities like these will

help to increase coincidence awareness in daily life.

Coincidences can reveal and expand latent personal powers. Currently controversial, psi may come to be recognized as part of the natural world (Cardena 2018). Related experiences including simulpathity (Stevenson 1970) and human GPS (Stanford and Stio 1976; Palmer 1997) have gained some research support. Discovering the mechanisms underlying these human abilities will be made increasingly possible as funding sources recognize their ordinariness. In the meantime, coincidences can provide personal validation of these observations.

Increased awareness and use of coincidences can have their downside. Synchronicities and serendipities are often presented as only positive. Like technological innovations, they can also be problematic.

They may be used to deceive someone or be fabricated to attract attention. They may trigger destructive actions. They may seem to promise an outcome that does not materialize. A high frequency of coincidences can be overwhelming. They also can be symptoms of psychosis. (For detailed examples, *Meaningful Coincidences: How and Why They Happen*, forthcoming.) The future will help to identify not only beneficial coincidences but also potentially harmful ones.

Summary

Coincidences have long served humanity as clues to predicting and controlling events. Meaningful coincidences are composed of two primary elements, Mind and Object, which create three coincidence forms: Mind-Object, Mind-Mind, and Object-Object. They can be useful in many aspects of human life on a personal level and also in science the arts and business leadership. Coincidences can also continue to serve as probes into the mysteries of life to expand our understanding of reality. They also exercise the mind by activating individual self-observers and by requiring the application of both intuition and rationality in their interpretation. In addition

their explanations require thinking simultaneously about multiple possibilities while also challenging the belief that mind is entirely separate from environment. The continued expansion of interest in coincidences will help to open human minds to yet unthought-of of possibilities.

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Collaborative Creativity

Wendy Ross¹, Sam Smith² and J. E. Vistic³

¹Department of Psychology, Kingston University, Kingston upon Thames, UK

²Department of Social Sciences, Oxford Brookes University, Oxford, UK

³BIMM Institute, Brighton, UK

Abstract

In this entry we suggest that a shared view of the possible has accompanied the development of successful creative collaboration both in modern time, in the historic past, and from the viewpoint of deep history. The concept of the possible in collaborative creativity is distributed, in rather than predicated on an individual, at times this possible is unknown by all until the moment it becomes actualized. The possible, when considered in this way, becomes a relational phenomenon existing in a shared future both inspiring collaboration and also inspired by it. This entry will start by drawing a distinction between creativity in groups and collaborative creativity before moving to examine how a distributed sense of the possible drives commonly collaborative ventures such as in music or science and how collaboration unfolds across multiple time scales. Finally, we will move to an aspect of creativity more rarely considered from a psychological perspective – that is how creativity appears in the archaeological record. The study of creativity should have great appeal to pre-historians: The remarkable creativity of our species appears to be one of the defining features that separates humans from the rest of the animal world, but an individualist view of creativity has stymied previous study. Our review of the current evidence suggests that the fundamental building blocks of the development of human creativity lie in demographic and

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neural changes relating to social engagement. This points to the tantalizing suggestion that all creativity should be considered as collaborative.

Keywords

Collaboration · Deep History · Distributed Creativity · Demography · Social intelligence · Extended Mind · Entanglement

What is indisputable [...] is the fact that humans live not only in the here and now but are capable of enriching and expanding their experience of the world by remembering the past, imagining the future, considering alternatives, anticipating problems and continuously engaging in ‘as if’; ‘what if’ and ‘if only’ thinking processes. The common denominator between these experiences is the capacity to go beyond the actual or the real and to explore the possible. (Glăveanu 2018, p. 1)

In this entry we suggest that a shared view of the possible has accompanied the development of successful creative collaboration both in modern time, in the historic past, and from the viewpoint of deep history. Conversely, collaborative creativity also expands and surpasses the boundaries of what is possible for an individual to conceive and to achieve. So for example, the improvisatory genius of a single individual such as, say, John Coltrane, can be best understood as emerging from several entangled factors: the material and collaborative conditions of the jazz music of his day, for example, the saxophone, bass and drums; the US economy; the changing language of jazz; the ethnic and social aspects of his time; and the social demographics and the possibilities of collaboration in his musical scene. Beyond these material necessities, his band’s ability to follow his innovative approaches to the language of jazz was also integral to his musical talent. Thus, while his individual qualities arguably drove the resultant product, a true understanding of creativity needs to also settle on a level of analysis which takes into account these factors.

Additionally, because the concept of the possible is distributed, in our view, rather than predicated on an individual, at times this possible is

unknown by all until the moment it becomes actualized. The possible, when considered in this way, becomes a relational phenomenon existing in a shared future both inspiring collaboration and also inspired by it.

This entry will start by drawing a distinction between creativity in groups and collaborative creativity before moving to examine how a distributed sense of the possible drives commonly collaborative ventures such as in music or science and how collaboration unfolds across multiple time scales. Finally, we will move to an aspect of creativity more rarely considered from a psychological perspective – that is how creativity appears in the archaeological record. The study of creativity should have great appeal to prehistorians; the remarkable creativity of our species appears to be one of the defining features that separates humans from the rest of the animal world. Our review of the current evidence suggests that the fundamental building blocks of the development of human creativity lie in demographic and neural changes relating to social engagement possibly pointing to the tantalizing suggestion that all creativity should be considered as collaborative.

Collaborative Creativity

There are two distinct strands when it comes to psychological research examining how we are creative in groups, which are perhaps more complementary than their supporters care to admit. However, each posits diametrically opposed views of the ontological locus of creativity and, importantly, the level of analysis necessary to unpick it. One views creativity as an essentially individual process and has as a research focus individual attributes which are reduced even so far as the firing of neurons associated with creativity (see Sawyer 2011 for a review). Others reject the idea such a closed system is reflective of true creativity, rather they suggest that creative processes and products arise from a combination of people, products, and moments (Glăveanu 2015; Montuori and Purser 1995; Ross and Vallée-Tourangeau 2018).

An understanding of these two viewpoints can elucidate the difference between collaborative

creativity and group creativity. This latter sees creativity as a linear, additive process preserving the boundaries of the individual as she works in a group. This research focus necessarily privileges both the individual as a unit of analysis and a quantitative methodology which often employs tasks such as the Alternative Uses Task to quantify creativity. Such an epistemological position pins the locus of creativity on the individual and casts group creativity as something that occurs when a measurable outcome is formed by the interaction of these individual creative units (Glăveanu 2011). The individual is the focus of attention rather than the group.

However, this research program, while elucidating some aspects of the creative process, does not reflect collaboration as documented across other naturally occurring domains. Those who assert collaborative creativity is distinct from group creativity suggest that some creative processes and products cannot be fully understood at the individual level of analysis and that group level analysis is necessary (Glăveanu 2011; Sawyer 2010). The level of analysis is not trivial here in understanding how we can unpick the creative process when it unfolds collaboratively. Collaboration is necessarily a group activity and, if we study collaborative creativity, then a model which reduces beyond the group level will lose much explanatory power.

Moran and John-Steiner (2004, p. 11) refer to collaboration as “an intricate blending of skills, temperaments, efforts and sometimes personalities to realise as shared vision of something new and useful.” Regarding collaboration as a naturally occurring relationship between two or more people often leads to changes in methodology with a focus on a qualitative, idiographic approach exploring how non-substitutable components interact. These components will almost certainly have different qualities to each other and thus products of collaboration as a complex system are perhaps best considered as truly emergent – that is irreducible to their constituent parts (Sawyer 2004).

Research into collaborative creativity approaches creativity as an in-between process with a final creative product that emerges from the combination and interaction of different,

complex actants. As a result, the product and process cannot be reduced to individual units of analysis. The focus of this entry will be on how such collaborations involve a creative product that is only possible as an emergent product of that collaboration. In this way, we fundamentally reject the idea that collaboration consists of a group of interchangeable actants, rather our notion of collaboration is that it is unique, occurs on multiple timelines, and is irreducible.

Collaborative Creativity and an Emergent and Distributed Possible

Improvisational Jazz

When the possible is distributed across different members of a group, then what is actualized is a shared vision which is often not available to the members of the group until the moment it comes into being. This is true for rehearsed and iterative group composition, but it finds its apex in improvisation where the product is ephemeral and explicitly interactional. For example, group jazz improvisation is an art form which simply cannot be understood in terms of individual, conscious cognitive processes and where what is possible is predicated on what occurs at the group level rather than individual contributions. Indeed, this form of group creativity is so explicitly collaborative that Seddon (2004) suggests it generates an “empathetic creativity,” that is, a creativity that is necessarily dependent on the presence of others.

In the domain of psychological research this art form is often used as a fundamental challenge to a reductionist notion of creativity (Kenny 2014; Sawyer 1992). This is not only because an analysis of the individual’s creative output would not capture the final product in a satisfactory manner, but also because it is impossible for the individuals in the group to know, let alone shape the creative process in its entirety (Sawyer 2010). In improvisational performance the social group is not only conceived of as influence but as co-creators. Again, the appropriate level of analysis is fundamentally important.

In addition, it is impossible to assess the creativity of such groups without an awareness of their

positioning in a temporal space where the collaboration is not only with the current members of the band but also with the musical tradition. For free form jazz is not as uncontrolled as might be first assumed, rather its novelty arises from the recombination of learned set pieces and is contingent on a shared thought and moment as well as a deep shared history. Thus when we are assessing the creativity of such a group, the traditional methods of assessing the product cannot work because it is necessarily ephemeral, so we must take into account the process, and the practice of music making; the “creative process and the resulting product are co-occurring” (Sawyer 1992, p. 253). For this type of collaborative creativity, there is no individual ownership of the final product and so the moment at which the possible is conceived is at the moment of actualization.

Scientific Collaboration

The distribution of the possible also arises in more concrete forms of creativity. Scientific innovation has always been collaborative – the first coauthored paper appeared in 1665 (Beaver and Rosen 1978) – but there has, however, been a significant increase in scientific collaborations with ambitious projects such as the Large Hadron Collider pooling resources in order to further scientific discovery and creativity in way that a single team cannot afford to do in terms of either financial or human resources. Coauthorship of scientific papers has been rising steadily both in terms of the numbers of authors and the number of countries from which those authors are drawn (Gazni et al. 2012). Technological changes have both facilitated this deeper level of collaboration and meant it is necessary as the technical skills needed to operate equipment require levels of expertise that cannot be found in a single individual. Thus, the shared possible here becomes a fractured product if only considered at the individual level. The possible here is greater than the sum of its parts.

Increased collaboration has a positive impact on productivity and the citation level of individual researchers, but it also has a wider impact than

this; it effectively increases the range of what is possible in scientific research. Beyond the pooling of financial resources, scientific collaboration allows creativity to develop in a nonlinear, iterative, and reciprocal manner. The benefits of scientific collaboration are not just realized by a brute force increase in numbers but also by encouraging and exploiting disciplinary diversity. Here what is possible is not determined by what is similar between collaborators but what is different and the possible arises in these complementary tensions. As we have seen above, what emerges is more than a linear, additive formula treating collaborators as interchangeable units. This transdisciplinarity is essential to capitalize on serendipitous discoveries (Rocca et al. 2019).

As collaboration occurs across disciplines, it encourages diverse groups of researchers to pool different areas of expertise to create something that would not be possible for one individual. This, in turn, allows individuals to become increasingly specialized within a team of other specialized individuals which they would not be able to do without offloading some skills to others (Ness and Riese 2015). This creates an iterative relationship between the individual and the group extending beyond an analysis of the scientist as an individual. Again, the possible cannot be understood at an individual level but emerges from the process of multiple, different individuals. Moreover, just as with a jazz ensemble this collaboration extends back in time as well: any discoveries are made through collaboration not only with those researchers currently on the project but also those who have already made the necessary advances.

Trust and Tension

Modern scientific collaborations require a high level of trust (Andersen 2016) and its increasing complexity supports specialist knowledge rather than a polymath. This requires relinquishing individual control. Trust is not a given and therefore, it also needs to be assessed in the context of the temporal developments of the relationship. Such trust can only develop over time and grows as the

relationship develops allowing for a steady widening of the boundaries of the possible.

This is also true for artistic collaboration. In a jazz ensemble, for example, band members cannot be simply exchanged for other equally talented members with the same outcome because music making in such groups is a dynamic and shifting mix of formal and informal approaches. While jazz players can be substituted the dynamic mix will result in a different final product. As is the case with the types of close creative collaborations outlined above, creative processes in this environment are informed by social processes as much as the act of creativity itself (Kenny 2014). Importantly, satisfactory improvisation in such groups does not happen spontaneously but rather arises from social interactions that act as backdrop to supply the level of trust necessary to work collaboratively (Kenny 2014; Seddon 2004). The creativity is enacted in the moment, but the collaborative ties are formed over time. In her ethnographic study of creative collaboration in a jazz ensemble, Kenny writes of a “sense of camaraderie” (p. 4) and a “shared history” (p. 5) and Seddon tells of two members of the band he studied who had attained a higher level of “sympathetic attunement” (p. 73) through spending time playing and travelling together. The piece of music then emerges from this mix of current work and shared history and cannot be understood simply as the addition of talents from interchangeable components in an easily generalizable model (Sawyer 2006).

Material Collaboration

The creative product is often constrained by the things around it. Just as the initial flurries of artistic creativity in our prehistoric ancestors were often constrained and used the surrounding natural features to shape their artistic output (Froese 2019), so materials can be considered key collaborators in the creative process to this day. In the same way as human collaborators serve to shape the final creative product, so materials exert an influence over the process.

That the materials used in artistic creativity influence the creative act and shape and constrain what can be done is a commonly reported phenomenon. Take, for example, the experience of working with clay. Paul March’s (2019) writings on this process reveal how the actual physical materials with which he works shapes the creative process with the delicate nature of porcelain contrasting with the more robust nature of stoneware:

The physicality of sculptural experience can be felt by comparing two different clays: stoneware and porcelain. Metaphorically speaking, stoneware is dynamic, generous and forgiving—confident in its plastic potential. Porcelain is intransigent and full of inertia. With porcelain, the act of creation and the outcome of the engagement with my hands take place within boundaries set by the clay’s limited elasticity and excessive friability. Sculpting with porcelain is a tense negotiation. (March 2019, p. 137)

The subtly different affordances of the material used intervene in the final artistic work similar to the way in which a human collaborator would. Again, the possibilities arise in the difference, in the “negotiation” and tension between the human and nonhuman collaborator (see also Glăveanu et al. 2013). Moreover, there is a relationship of trust and tension which mimics the intensity of the human/human relationships described above. Other artists discuss being aware of how material reacts and how they respond to a question posed by the material rather than imposing their imagination on that object (Botella et al. 2013).

Collaboration Across Different Time Scales: The Development of a Shared Possible

When we consider collaboration, it is important to consider it as a process unfolding across multiple time scales. Not only do collaborative creative processes occurs against the backdrop of a particular sociocultural field which structures, constrains, and extends possibilities, they also take place within the different life histories of those collaborating. Thus, collaboration and the

possible take place on different time scales from the micro to the macro. On the one hand, the possible is created at the moment of production, on the other it comes into being as relationships develop between the collaborators. These can almost be conceived as two versions of the possible: an emergent, immediate possible which is grounded in material action and an ever present shadow of an “envisioned” possible which captures the cumulative possibilities for thought and action that come out of experience and that we can more easily reflect on. There is also an explicit tension in considering the relationship between the sociocultural background and the role of the individual in creativity: the novelty inherent in creative acts requires the transgression of the sociocultural norms and yet the evidence suggests that the creative act is at the same time dependent on sociocultural changes.

Collaborations take place against a rich tapestry of ideas, language, and materials and even an individual who doesn't name direct collaborators cannot be fully understood without reference to this. We would extend the concept of collaboration beyond direct collaboration with people and things to describe the dialogue between past and present ideas (see also Ross et al. 2020) where one of us has expanded this idea further). There are fertile moments in history that generate cultural moments from which new creative products emerge (Simonton 2019). Alongside an inspirational social milieu, the material conditions are hugely influential on the levels of creativity and this appears to hold throughout history. Again, what is possible arises from a tension between the individual and the surrounding creative energy which at once extends and constrains the individual. An understanding of the possible as it relates to creativity must take into account the indirect collaborations which arise from a situated individual.

Even those people characterized in the collective imagination as an individual genius are perhaps best understood as arising from this complex and dialogic network of indirect collaborations and sociocultural forces (Ross and Vallée-Tourangeau 2018). Take, for example, the work

of Shakespeare: The modern desire to attribute authorship to one sole individual and grant him ownership of the text is anachronistic when applied to his plays which were generated when ideas of text ownership were not understood as they are today. It is notable that the entire field of authorship studies has now arisen to disentangle the phraseology and words that can be attributed to different single authors from this period. Thus, collaborations are woven into the very fabric of the texts we have inherited (Dahl 2016) and these texts reflect speech patterns and thoughts that cannot be easily attributed to any one person. For example, Marlowe's and Shakespeare's influence on each other until the former's dramatic death was substantive to the extent that there are still many who are convinced that Marlowe is a better candidate for authorship of the plays commonly attributed to Shakespeare. Indeed, Muthukrishna and Henrich (2016) review the history of many modern innovations, such as the light bulb or the theory of natural selection, and show that these are best explained as the result of collaboration and cultural recombination, with little credit given to their supposed inventors (see also Lamb and Easton's theory of multiple discoveries 1984).

Collaboration and Cognitive Modernity: The Possible in Deep Time

Evidence from primatology suggest that wild apes are neophobic, extremely conservative, and avoid innovation where possible (Forss et al. 2016), a situation which stands in stark contrast to the creative nature of modern human societies. However, the exceptional creativity that characterizes our contemporary situation is not evident for much of our deep history. Instead, the archaeological record suggests that for long periods, sometimes spanning millions of years (Finkel and Barkai 2018), we seem to have been little more creative, at least in ways that are evident in the archaeological record, than chimpanzees or other ape species. Perhaps, seen in this light, creativity is not likely to be a particularly fruitful field of

study for those concerned with our species' long-term development. This situation is exacerbated by the fact that archaeology is concerned with long-term patterns and behavioral trends, rather than individual action, and in this context it is extremely unlikely that archaeology will identify creative, or innovative, behavior unless and until that innovation has become widespread among a population and persistent over long-time spans (Hovers and Belfer-Cohen 2006).

Given this, it is clear that the data sets available to prehistorians are not suited to the study of individual creativity and so the recent focus has been not on individual moments of creativity, but more on the social and ecological contexts that encourage creativity (Kuhn 2012). This has been a far more fruitful avenue and seen from this standpoint, creativity becomes an essentially collaborative process. In this section, we will briefly review a selection of archaeological evidence demonstrating that collaboration is a powerful explanatory tool not only for the transmission of creative products but also for the development of creativity itself and finally suggest that creativity in all its forms may be best viewed as an expression of collaborative intent.

Deep History

For vast swathes of our deep history, hominin evolution suggests that our ancestors were not particularly creative, especially in the realm of material culture. For example, the Acheulean handaxe – a bifacially flaked large cutting tool that first appears in the archaeological record around 1.8 million years ago in Africa – remained, essentially unchanged, the tool of choice for over a million years (Finkel and Barkai 2018); a remarkable period of stasis and conservatism. Indeed, many archaeologists (e.g., Mithen 1998) have argued that we do not see real human creativity until the Upper Paleolithic period (around 40,000 years ago) in Western Europe. This period has been characterized as a creative explosion and is marked by rapid diversification in stone

tool styles, flexibility in hunting strategies, and, perhaps most dramatically, a flourishing of both parietal and mobiliary art. Traditionally, many archaeologists have explained this pattern, that is a long term stasis followed by a sudden florescence in creativity, as being a result of a neurological “tweak” in the human mind that created “modern” or creative cognition at around 40,000 years ago (Klein 2000; Mithen 1998).

However, a growing corpus of data now shows that this explanation is untenable (d’Errico and Stringer 2011; McBrearty and Brooks 2000). As we collect more data on the behavior of our Paleolithic ancestors, the evidence indicates that creativity did not emerge in a “big bang” 40,000 years ago. Rather the data now show that creativity (at least durable material creativity) appears and disappears from the archaeological record over a period of several hundred thousand years. For example, Henshilwood et al. (2011) have shown that during the Still Bay period human groups in Southern Africa were making art, jewelry, and bows and arrows around 80,000 years ago, indicating that humans could be exceptionally creative well before the 40,000-year neurological tweak proposed by Mithen and Klein.

Additionally, it is now also recognized that such periods of exceptional creativity, such as the Upper Paleolithic or the Still Bay, did not lead to sustained creativity among our species, rather these periods were followed by long periods of creative stasis. A final nail in the neurological explanation for Upper Paleolithic creativity is provided by the fact that we now have good evidence that Neanderthals were also capable of remarkable creativity including the manufacture of art and jewelry (Finlayson 2019). Taken together, these lines of evidence have led many archaeologists to propose that periods of exceptional creativity are not caused by modifications to the brains of individuals, but rather reflect demographic factors, including population size and the closeness of social networks (Powell et al. 2009).

Demographic models of this type generally assert that large groups of social learners (equipped with the biological and material

equipment to transmit and maintain culture) are more creative than small disconnected groups. Based on model data, Powell et al. (2009) show that not only are large connected populations needed for the transition and maintenance of culture, but also that large populations of closely collaborating individuals are also key for the creative process itself. This model implicitly flags collaborative creative as a key mechanism not only in the transmission and acceptance of innovation but in its actual occurrence. Larger populations are not just more likely to sustain creativity, they are more likely to generate it. Joseph Heinrich and colleague elaborate these ideas and argue that human creativity is essentially an emergent phenomenon of large well-connected populations of social learners (e.g., Muthukrishna and Henrich 2016). Muthukrishna and Henrich argue that innovations mainly occur through serendipity or through cultural recombination which leaves little, if any, role for the individual genius. Demographic models of this ilk provide a far better fit with the archaeological and biological evidence and suggest that throughout our evolutionary past almost all creativity was essentially collaborative in nature.

While these models may explain how large, collaborative human social networks foster creativity, they do raise the question of why we saw so little creativity until the last half a million years of our evolution – as demonstrated by the Acheulean “stasis” discussed above. Here the answer may lie in the not in a neurological “creative” tweak but rather in the development of a suite of cognitive mechanisms that foster close collaboration between groups that may not have been in place until around 500,000 years. Elsewhere, one of us has argued that by around 500,000 years our ancestors possessed the socio cognitive skills and biological capacities (e.g., language, shared intentionality, full theory of mind, and the ability to share plans for the future and reflections on the past) to undertake close collaboration (Underdown and Smith 2019). Additionally, from this time onwards there is good evidence that hominin groups engaged in collaborative

hunting; a major creative development that allowed our ancestors to become the planet’s apex predator (Conard et al. 2015). It may also be significant that 500,000 years ago also marks the period where the Acheulean handaxe is replaced by a more varied a flexible stone tool technology. We argue that, from this point onwards, humans possessed the biological kit needed to collaborate, and that collaborative creativity was now possible whenever demographic and social factors were in place. Collaboration, rather than the development of individual cognitive capacities, may well be what made creativity possible.

Conclusion

Collaborative creativity moves beyond the understanding of creativity as an accumulation of individual units, rather this view takes a broader view of creativity seeing it as emerging from the interaction of people and things. In this way, collaboration is intimately bound up in the possible. Like the possible, it exists across multiple time scales and in the differences between people and things. Furthermore, such collaboration is predicated on a shared sense of the possible and that possible becomes extended through collaboration. Thus, while in collaborative creativity, the possible only becomes visible when it is actualized collapsing the divide between the actual and the possible, it is this shared vision of the possible which motivates collaboration.

Extending back into our deep history, our brief review shows that most (if not all) human creativity appears to have been collaborative in nature and that focus on the links between the individual cognitive process that underlie collaboration coupled with analysis of the social networks and demographic settings of our prehistoric ancestors may provide a powerful means to explain the sporadic appearance of creativity in the past rather than a focus on creativity *per se*. This is in line with much recent thinking that focusses upon the collaborative nature of human cognition in general (e.g., Wilson 2005). According to this

hypothesis, stunning creative achievements are able to be interpreted as visible manifestations of human collaboration.

Cross-References

- Creativity
- Perspective-Taking
- Possible in Anthropology
- Possible in Performance and Performing Arts

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Complexity

Alfonso Montuori

California Institute of Integral Studies,
San Francisco, CA, USA

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Definition

“It’s a complex situation.” “He’s a complex person.” The term *complex* is used with increasing frequency to describe a situation or person that is difficult to understand and know how to deal with. Dictionary definitions refer to a phenomenon or problem with many interconnected parts that is not easy to analyze or understand. The etymology of the word complex is the Latin *complexus*, or “woven together.” Complex problems and complex systems are interconnected, interdependent, and unpredictable. This entry describes and places the work on complexity within the field of the possible.

Introduction

Complexity is not *complication*. A knot that needs to be unraveled can be complicated, meaning the procedure will be time-consuming and requires close attention. A complicated recipe or procedure may involve multiple steps that are individually difficult and may need to be performed with very tight time lines. But the steps themselves are nevertheless clearly laid out, and such a complicated task is fundamentally *algorithmic* and *structured*. Complex problems, on the other hand, involve unstructured processes in unstructured contexts and can therefore be described as *heuristic*. There is uncertainty and unpredictability in both process and outcome. With no set preexisting

rules to be followed, the process itself has to be *created*. To paraphrase the poet Antonio Machado, there is no road to follow, and the path is laid down in walking. The lived experience of complexity requires the ability to respond to the unforeseen as well as generate the unforeseen, to come up with as yet unknown ideas and approaches – in other words, to *create*, explore possibilities, and to *improvise* – the Latin root of improvisation is *improvisus* or unforeseen (Montuori, 2003).

How can human beings deal with an increasingly complex world – interconnected, interdependent, and uncertain? Scholars have argued that we live in “liquid” (Bauman, 2007), or “postnormal,” times (Sardar, 2010), or in the Anthropocene, so named because human activity has become the dominant influence on the environment and climate. A strong argument has been made by systems and complexity scholars that a new way of thinking is needed to address the complexity of the world (Bateson, 1972; Capra & Luisi, 2014; Morin & Kern, 1999). Central to that new thinking is the ability to entertain many possibilities, to differentiate, and to integrate them (Suedfeld et al., 1992), as well as generate many possibilities.

In this entry, following Morin (Morin, 2008a, b) we distinguish between restricted and general complexity. The former refers to what is known in the USA as complexity theory, and the concept of Complex Adaptive Systems (CAS). It uses computers and mathematics to model complex systems. Morin writes that general complexity requires an epistemological shift that includes a reflection on the role of the inquirer and the fundamental principles of thinking, moving from a paradigm of simplification based on reductionism and binary logic to a paradigm of complexity based on distinction and conjunction. I will address these terms more extensively below. The “general” also it refers to a way of thinking, and arguably a worldview, that informs everyday thinking, choices, and decisions in the form of what Morin calls “complex thought.”

This entry begins with an overview of the “paradigm of simplification” (Morin, 2008b) that emerged with Newtonian/Cartesian science.

Starting with Newton, there follows a brief sketch of three scientific paradigms, which in the twentieth century culminated with the emergence of complexity in science and the “creative universe” rather than the machine universe of Newton and Descartes. From there, we transition from the science of complexity to the challenge of complex thought, and the argument that in order to make sense of a world that is interconnected, interdependent, unpredictable, and uncertain, a new kind of thinking is needed. The further challenge of exploring possible futures, and the relative absence of a flourishing discourse about possible positive futures, is, I will argue, due in part to the fact that given the current time of global transition, complex futures cannot be envisioned with a paradigm of simplification.

The Paradigm of Simplification and the Limits of Analysis

Psychologists have found differences in thinking between East Asians and “Westerners” (Nisbett & Miyamoto, 2005), by which they mean the USA, Canada, and Northern Europeans:

Westerners tend to engage in context-independent and analytic perceptual processes by focusing on a salient object independently of its context, whereas Asians tend to engage in context dependent and holistic perceptual processes by attending to the relationship between the object and the context in which the object is located. (p.467).

Analytical thinking refers to the process of separating something into its constituent elements. It is a central aspect of the “paradigm of simplification.” Analysis has become synonymous with “good” thinking in the West,¹ and to say one is going to analyze a problem colloquially means one is going to give it serious, systematic attention, by breaking the problem down into its constituent components.

¹ These are obviously generalizations, because central and southern Europeans are generally found to be more holistic, and Western thought is by no means monolithic. Key figures in the Western intellectual tradition have critiqued the Newtonian Cartesian paradigm. Notable examples include Vico, Goethe, and Blake. Nevertheless, the dominance of the paradigm of simplification cannot be denied.

Key features of the paradigm of simplification include the following (Harman, 1991; Heath-Carpentier, 2022):

Reductionism, or the assumption that complex phenomena must be explained in terms of component, simpler phenomena, and that a whole is explained from the knowledge of its parts. Reductionism involves the search for ever more fundamental, simple, constituents of a phenomenon. Reductionism is a way of thinking and an assumption about the world, namely that it can be reduced to its most basic foundation. On a larger scale, this meant that sociology could be reduced to psychology, then biology, chemistry, and finally physics, which was viewed as the bedrock foundation of everything. For psychologist Viktor Frankl, this form of reductionism was close to nihilism in its “nothing but-ness” (Frankl, 1969), such as when love is reduced to *nothing but* the effect of hormones.

Positivism, the assumption that all that can be known scientifically is derivable from physically measurable quantitative data. Positivism’s attempt to eliminate vague metaphysical statements proved to be too limiting and made it virtually impossible to talk about the most significant aspects of life.

Objectivism, the conviction that the observer is separable from the observed. Cybernetic epistemology, and notably feminist scholars (Code, 1991), rejected the attempt at eliminating the role of the observer. The observer returned to center stage, and in the most sophisticated approaches to complex thought this became an opportunity for self-knowledge and creativity (Heath-Carpentier, 2022; Hodgson, 2020).

Determinism, the doctrine that phenomena can be predicted from knowledge of scientific laws and of their initial conditions. Countering determinism, twentieth-century developments in science, notably quantum physics and chaos theories, have emphasized uncertainty and the extent to which the world is unpredictable (Peat, 2002).

Disjunction, separating with an either/or logic. Disjunction is a process of separation, colloquially referred to as either/or thinking. Many of the dualisms of modernity, such as thinking and feeling, mind and body, and objective and subjective, are examples of disjunctive separation of complex phenomena. It is now becoming clear, for instance, that thinking and feeling as well as mind and body are not separate but profoundly interconnected and interdependent. This also means they are far more complex than previously thought. While it is useful to make *distinctions* between these terms for purposes of orientation and system definition, to *separate* them creates the world of closed noninteracting systems of the Newtonian world (Heath-Carpentier, 2022).

Scientific Origins of Complexity

The scientific study of matter started in the seventeenth century with Newtonian mechanics. The Newtonian universe was portrayed as a giant machine or clockwork. This was a powerful image with profound implications. Human beings began to think of themselves as machines, notably in Julien Offray De La Mettrie’s 1747 *L’homme machine*. Today this machine metaphor is still found in talk of “programming” or “hacking” the brain. “Bodywork,” a term initially used for auto repair, is used for therapeutic massage and physical therapy, and the expression “well-oiled machine” describes efficient organizations or teams.

Scientific innovation led to the advances in technology at the heart of the Industrial Revolution that dramatically changed the world. Inevitably there appeared a fly in the ointment of the well-oiled Newtonian machine. In the nineteenth century, with Rudolf Clausius, Ludwig Boltzmann, and the development of the laws of thermodynamics, the static view of the Newtonian world did not hold. With the second law, Clausius introduced the concept of *entropy*. Entropy is defined as energy that is unavailable for work. The second law of thermodynamics states that in a closed system, entropy never decreases. Entropy involves the spontaneous transformation of order into disorder: Cars will rust, machines wear out,

not all heat is converted to work, the breakdown of patterns and structures will either increase or stay the same, and in the end concepts like clockwork universes run down, too. Rather than a perfect machine, the universe was now seen as gradually moving toward an inevitable heat death. This was arguably the moment when complexity appeared in a Newtonian universe, where the physical laws had been reversible and time did not play a role. With the second law of thermodynamics, this was no longer the case. The arrow of time was introduced, and its role was essentially to tear away at the pristine primal perfection that had been imagined for the world.

At the beginning of the twentieth century, physics could account for dis-organization, but it was unable to account for the organization and reorganization of the Universe. It was still the case that smooth change, predictability, and equilibrium were seen as normal. Complexity, irregularities, and far-from-equilibrium systems could not be studied and as a result were dismissed as peripheral. Linear phenomena change slowly and in predictable ways. They are analyzable, predictable, and controllable. The nonlinear equations necessary to address more complex, unpredictable phenomena had to await the power of computers and the birth of complexity theory. The concept of emergence, “nature’s creativity” (Rue, 2007), and new developments in evolutionary theory pointed to the creative, innovative nature of the universe (Bocchi & Ceruti, 2002; Ceruti, 2008).

The physicist Paul Davies summarizes the next paradigmatic development (Davies, 1989):

Now there is the paradigm of the creative universe, which recognizes the progressive, innovative character of physical processes. The new paradigm emphasizes the collective, cooperative, and organizational aspects of nature; its perspective is synthetic and holistic rather than analytic and reductionist. (p.2).

As Davies suggests, in the new view the universe is interconnected, interdependent, and actively *creative* of new phenomena and processes. He also makes the crucial point that a different approach is needed to understand this creative universe. The analytic, reductionist

approach which focused on breaking phenomena down to their most basic components could not account for how components were connected, the result of their interactions, the systemic properties of the whole, and the emergence of novelty.

What is needed to understand this new universe is a kind of thought that is systemic and creative – in other words, complex. The synthetic and holistic approaches Davies speaks of, appropriate for a complex world, did not have to be invented out of whole cloth. They had a tradition in western thought. The precursors of today’s science of complexity include the tradition of Holism, as in the German Gestalt school (Ash, 1998; Harrington, 1996), and more specifically in the development of General System Theory (GST) (Von Bertalanffy, 1976), Cybernetics, and Information Theory (Bateson, 2002; Maruyama, 1974; Morin, 2008a). Indigenous science and Buddhism are also highly sophisticated systemic understandings of an interconnected world and are now increasingly in dialogue with systems and complexity science (Cajete, 2000; Macy, 1991; Yunkaporta, 2020).

Cybernetics introduced the concepts of feedback and mutual causality. Negative feedback is deviation-reducing feedback, as in a thermostat. A decrease in temperature below a certain threshold kicks in the heating, so that a relatively stable temperature is maintained. Positive feedback occurs in so-called “self-exciting” or “run-away” systems when one person’s rude behavior leads another person to respond even more rudely and the interaction escalates until the arrival of the police acts as negative feedback. Positive feedback can be found both in vicious and virtuous cycles. Individuals who do not exercise tend to feel more and more out of shape and therefore do not feel like exercising, which makes them even more out of shape; as a result, they are even less likely to move, and so on. Positive feedback can also kick-start a situation that has become stuck. The more a person exercises, the better they feel, and so they are likely to keep exercising.

The notion of the feedback loop takes us beyond linear causality. Linear causality works in a straight line: A causes B, which causes C. In

cybernetic or mutual causality, we can see how A causes B while B causes A. This dynamic of mutual causality is found in interpersonal relations. John reacts to Mary's behavior, but Mary's behavior was in fact a reaction to seeing John. This can create scenarios where John might think Mary is angry at him, and therefore approaches her defensively. Meanwhile, Mary thinks John is acting aggressively and so responds in kind, in an ongoing spiral of misunderstanding. The causality is mutual, and any attempt to reduce it to a linear dynamic typically descends all too soon into "you started it," "no, you did." This is why therapists with a systemic orientation tend to avoid going back in time to see "who started it" and focus on the patterns of behavior that keep the problem going (Smith-Acuna, 2011).

Cybernetic epistemology, or second-order cybernetics, involves the study of *observing* systems, rather than *observed* systems (von Foerster, 2003). It introduced the role of the observer (researcher) into the research process, making the observer a participant rather than a bystander. This participatory approach provided an alternative to the more traditional approach of attempting to eliminate or at least disguise the observer in a quest for objectivity. Cybernetic epistemology pointed to the importance of self-reflection, an awareness of circularity and of the larger assumptions that influenced inquirers, as well as a sensitivity for the ever-present possibilities of errors, illusions, and self-deception, and the creative dimension of inquiry.

General System Theory (GST) has made the useful distinctions between system and environment, part and whole, and the central concept of the open system. From a systems perspective, in the Newtonian view the whole world is made up of closed systems. Rather than self-contained "atoms," open systems are in a constant exchange of matter/energy with their environment. This is very clear in all living systems. From the perspective of GST, any open system needs to be studied in its context. This means including its exchanges with its environment, rather than abstracting it in a laboratory setting. Abstracting here specifically (and etymologically) means removing from its context.

The implications of this view extend to the very notion of identity. As Morin (Heath-Carpentier, 2022) points out,

we arrive at what I logically call the autonomy/dependence complex. For a living being to be autonomous, it must depend on its environment for matter and energy as well as knowledge and information. The more autonomy develops, the more multiple dependencies develop. The more my computer allows me to have an autonomous thought, the more it will depend on electricity, networks, and sociological and material constraints. We arrive then at a new complexity for the living organization: autonomy cannot be understood separate from its broader ecology.

A fundamental tenet of GST is that the behavior of systems cannot be understood through an analysis of the parts that make up the system. A complex system is more than the sum of its parts. Complex systems, which can range from the global economy to ecosystems to the human brain, have *emergent properties*, or systemic properties, that cannot be predicted from the behavior of the individual parts but are the result of their interactions (Johnson, 2001). Water is a classic example, as two hydrogen atoms and one oxygen atom combine to form a molecule of water – water is an emergent property.

Open systems survive only through a constant exchange of matter/energy and information with the environment. An open system is stabilized by this ongoing flow. Not enough input, and a living system dies. Too much input, and the system is overwhelmed, which can force drastic change. When certain levels of fluctuations are created by increasingly complex input, a critical or *bifurcation* point is reached. At that point, the system can move in any one of several directions until, after a period of turbulence, a higher, more complex order may be established. If a higher order does not emerge, the system returns to a lower level of organization (Prigogine & Stengers, 1984).

In the traditional Newtonian scientific paradigm, order was king, privileged above disorder, chaos, and "noise." The relationship between order and disorder was viewed as a hierarchical binary opposition. Disorder was viewed as a function of human ignorance, something that would,

eventually, with more and better knowledge, be integrated in the larger master plan. The world was assumed to be fully knowable and predictable. Reality may have *appeared* complex, but its true nature was simplicity.

One of the most interesting shifts in recent scientific thought, in particular because of the sciences of cybernetics, chaos, and complexity, has been a deeper understanding of the mutually constitutive relationship between order and disorder, information and noise. This shift also reflects a transition from a fundamentally static, orderly Newtonian view of the world, to one that is process oriented. Rather than a fundamental and unchanging order, there is an ongoing process: The interaction of order and disorder takes form in the process of (self-) organization. In the creative universe, disorder not only destroys structures, systems, and organizations, but it is also central to their development and regeneration. The interaction of order and disorder can be generative of new forms of organization, and any order is the result of an ongoing process, not of preestablished forms. It should perhaps come as no surprise that research shows creative individuals have a preference for complexity and also for disorder, but only to the extent that it can be, through a creative process, integrated into a higher order (Barron et al., 1997).

Self-organization has been defined variously as making meaning out of randomness, or the spontaneous emergence of a coordinated and collective behavior in a population of elements (Atlan, 2011). One of the key aspects of self-organization is the integration of perceived as disorder into a larger, more encompassing organization. This also led to Von Foerster's principle of "order from noise," Atlan's "complexity from noise," and Prigogine's "order out of chaos" (Atlan, 2011; Prigogine & Stengers, 1984; von Foerster, 2003).

Complex systems are on the edge of chaos, on the knife edge between order and disorder, and it is here that creativity is possible. The system is neither completely chaotic, or so orderly that nothing new can come in or come out. The philosopher Mark Taylor summarizes (Taylor, 2003):

(A)ccording to complexity theorists, all significant change takes place between too much and too little order. When there is too much order, systems are frozen, and cannot change; and when there is too little order, systems disintegrate and can no longer function. ... According to [Ilya] Prigogine disorder does not merely destroy order, structure, and organization, but is also a condition of their formation and transformation. New dynamic states. . . emerge in conditions far from equilibrium. . . . Complex adaptive systems. . . always emerge at the edge of chaos. . . [and] are in a state of continual evolution. (p.14–15)

Slime molds spend much of their lives as individual single-celled units but come together at various times to form one large organism. How this happened remained a mystery for a long time. The assumption was always that there was a "pacemaker," a leader of some sort (Johnson, 2001). Human beings are used to thinking of organization as hierarchical, with a leader at the top, and so this model was transplanted onto slime molds. It took at least a decade after Evelyn Fox Keller proposed that there was no pacemaker, and the process was bottom-up, self-organizing, with no pacemaker or leader, for the idea to have a real impact in the scientific community (Keller, 1983).

This example is an indication of how the emerging systems and complexity sciences led to a shift in thinking about the world. Another example comes from systemic family therapy. The very notion of a child being brought to therapy as, and with, a "problem" was challenged by systemic family therapists. Their argument was that the child's behavior could be a symptom of the larger dynamics in the family rather than a reflection of something being "wrong" with the child. More broadly, this has also manifested in a critique of the focus on blame in addressing problems. Systemically oriented thinkers have challenged the notion of a single source and cause of a problem, which results in someone or something to blame, in order to expose the dynamics of systems that contribute to problems, in contexts ranging from family therapy to the study of accidents (Newnam & Goode, 2015).

An extreme example of reduction and disjunction is found in political rhetoric (Montuori, 2005). The focus is on one particular group as

the source of all of society's troubles (immigrants, Jews, and people of color) then a sharp, absolutizing separation between "us" and "them," where "they" are evil and "we" are good. This is an example of the paradigm of simplification taken to its political extreme, and an all-too frequent page from the authoritarian playbook. During times of crisis, this strategy of simplification appears to cut through the complexity with a clear and distinct solution, hence its appeal. But it also is the case that while this polarized focus on an enemy may unite, the results are almost invariably catastrophic (Thompson, 1976).

Thinking Complexity

Transdisciplinarity and Complexity

The explicit goal of many of the pioneers of systems theory and cybernetics was to develop a language and a way of thinking that could move across the proliferation of mostly non-communicating disciplines (Bateson, 2004). They also sought greater communication between and integration of all the sciences and expressed their concern about increasing disciplinary fragmentation. In their view, any systemic inquiry studied a system in its environment, and was therefore almost inevitably an inter- or transdisciplinary project.

Transdisciplinarity has emerged in recent years as an approach to address "wicked" problems, so-called because of the difficulty in solving them as a result of their complexity (Martin, 2017). Wicked problems cannot be solved from the perspective of only one discipline. This means large public projects, for instance, must draw on scholars and expertise from a number of different disciplines. Wicked problems are systemic problems requiring systemic approaches. They form an interconnected system, there is a high degree of uncertainty, there are no preexisting ways to address them, and there are a plurality of possible perspectives and ways to approach them.

Transdisciplinarity is not only of use for tackling wicked problems. It can also be used to explore current understandings of phenomena,

such as creativity. A transdisciplinary approach is grounded in systems theory and complex thought. As a result, it would reject the assumption so central to creativity research for many years that the *who* of creativity research should be an individual abstracted from their context. From a systems view, any phenomenon should be studied by taking into account its relationship with its environment. As a result, a systems approach will almost inevitably take the researcher outside their disciplinary boundaries, adding to the complexity of the task. A psychologist faced with histories of prejudice and exclusion toward women in the arts and sciences, for instance (Eisler et al., 2016), may find this topic has received attention in sociological and feminist studies, but not psychology. A systems approach would require a more complex approach, a weaving together of information and meaning, and the development of transdisciplinary scholarship and collaborations across disciplines. A transdisciplinary approach would also explicitly incorporate creativity as central to the process of inquiry.

Creativity and Complexity

In the new view, the universe is creative and systemic in nature (Kauffman, 2016; Swimme & Tucker, 2011). Likewise, the problems currently facing humanity, such as climate change, terrorism pandemics, political instability, and immigration, are systemic in nature and require creative responses. Complexity is not only profound interconnectedness, but also profound creativity. But creativity was historically viewed as a phenomenon that manifested only in very few unique individuals (Montuori & Purser, 1995). It was a gift, a blessing, and a curse. It was also a mystery, and therefore not something that could be reproduced or taught or shared. As a result, creativity has not been an integral part of western educational systems. In fact, education was not intended to promote creativity. Educational systems were designed to produce people for the industrial age who could perform well in the assembly-line, in the mass production world of industry or government bureaucracy. Education itself took on an

assembly-like, mass production quality which emphasized the reproduction of information, the reproduction of workers who could fit in this orderly world, and the reproduction of the social order and hierarchy (Montuori, 2011b; Spring, 1994).

One reason for the absence of creativity was that following the Industrial Revolution there developed a split between Positivists and Romantics, with, in broad terms, positivism on the side of science and the romantics on the side of art (Brown, 1977; McGilchrist, 2009). For the science of the time, creativity was too unpredictable, subjective, not law-like enough, and essentially *too complex* to be studied scientifically. As a result, science presented itself as objective, coolly rational, and methodical. It omitted the subjective, creative experiences of scientists making breakthroughs.

With the split between Positivism and Romanticism, creativity ended up in the Romantic camp, where it was later popularized, commercialized, and oversimplified as the lone genius myth (Montuori & Purser, 1995; Stigliano, 1999). Deprived of creativity, academic inquiry described itself as a rather anemic, dull, systematic, methodical process that involved the accumulation and categorization of facts and the application of the scientific method with the goal of certainty, order, and prediction (Maslow, 1969).

It was far from clear how the scientific method actually leads to great scientific discoveries, because it was only in the biographies and autobiographies of scientists that readers learned about the realities of what actually happened leading up to great inventions and discoveries besides methodical systematic work: serendipitous discoveries (e.g., Fleming and penicillin), dreamy insights (Kekule and the benzene ring), visualization, *gedankenexperimenten* (Einstein riding a beam of light), the humor of Richard Feynman's spinning plates, and so on (Barron et al., 1997; Irvine, 2015). The actual creative process was not considered scientific or for that matter philosophical, yet it is clear that in practice the creative process lies at the core of all inquiry.

The focus in education all over the industrial world has overwhelmingly been on information,

categorization, and analysis of *what is*, rather than explorations of what *could be*. It is not surprising that one main way of showing one's intelligence in academia is through the ability to shoot down ideas, to exercise one's critical acumen. The cultivation of critical thinking is paramount, but little attention is placed on the kind of exploration of ideas, possibilities, and support of creative thinking necessary in the twenty-first century.

The analysis of what is, and the emphasis on critique, does not prepare students to deal with the possible, the unexpected, and does not encourage entertaining ideas for fear of being dismissed or ridiculed for presenting an idea that does not fit into what is currently accepted. The neuroscientist Gregory Burns has argued that fear of failure and public ridicule are key hindrances to the development of creativity (Burns, 2010). Ideas often emerge as fragile wisps that need to be cultivated, nurtured, and articulated before they can be critiqued. Possibilities will continue to be generated and explored in an environment that supports such a process. A too harsh environment will kill off ideas before they had a chance to develop, reducing the openness to possibility, and the willingness to stick one's neck out with a possibility rather than a certainty.

It would not be an exaggeration to say that the educational systems all across the world have sadly focused on learning to read music and develop instrumental skills, but they have not supported the education of students to generate and explore possibilities and make their own music. A musical analogy might illustrate the difference between the educational model that emerged from the industrial age and what is needed today, using western classical music and jazz as examples. The point here of course is not which type of music is better, but the nature of the skills developed in order to become an expert instrumentalist. For the industrial age, western classical musician learning to read music was essential, and the purpose was to learn to play the music of the great composers. For what we might call the musician in the age of complexity, learning to read music is not enough – it is also essential to be able to improvise, to compose in real time, on the spot, during a performance. The

latter is of course the model of jazz. In the former, all the musical possibilities are preestablished by the composer. In the latter, the musician has to be able to explore and perform live drawing on a range of possibilities in terms of their contribution to a particular piece. The possibilities range from the sound they choose to use on their instrument, the choice of notes, the interpretation of the mood of the song, and the vision of the bandleader, and so on (Berliner, 1994; Montuori, 2003).

Interestingly, before the industrial revolution there was a great tradition of improvisation in western music, and the great composers were also known as great improvisers. With the capitalist machine industrial model that emerged in the nineteenth century, the mythology of the genius composer, and the development of copyright, improvisation was discouraged and eventually eliminated from western classical music. Essentially, this meant that the range of possibilities in terms of choice of notes to play was reduced to zero. The composer's music could be *interpreted* in a limited number of ways, but the actual composition was entirely the composer's. In jazz, the compositions, such as the Great American Songbook, provide a vehicle, a mood, and a set of chord changes for the instrumentalists to explore, which means develop the possibilities inherent in the song, in their own playing, and the relationship between the two in the moment. As I have argued elsewhere, skillful improvisation can be seen as the embodiment of complexity – of systemic creativity, relational and generative: a dance of constraints and possibilities.

Possibilities, Constraints, and Complex Creativity

The most important task today is, perhaps, to learn to think in the new way Bateson, 1972, p.462.

The future is the horizon of human possibilities. And yet a review of the last 50 years ago leads us to think the “possibilities” for our world appear to be rather grim. Are there possibilities for a *better* world in a time when the dark clouds of environmental collapse, political, economic, and social

instability, and the resurgence of authoritarianism feature among many of the current global troubles? Terms like utopia, progress, and even the milder term “better” futures have had to make place for an avalanche of dystopian and post-apocalyptic imagery. Popular culture shows the popularity of dystopian and postapocalyptic literature and cinema. The optimism of modernity is gone, and in its place a generalized postmodern mood of pessimism and critique (Ogilvy, 2011).

The larger context is a global transition from one age – modernity, the industrial age – to an as yet unformed “next” age (Fraser, 2019; Kelly, 2021; Sardar, 2010). The present condition is postmodern, postnormal, or among many other terms, the Anthropocene, which essentially says humans are now responsible for changes in the environment. The dystopian images arguably reflect not only the death of one “world,” of modernity, but also the relative absence of alternative visions, of what is next, with some notable exceptions (Kelly, 2021; Morin & Kern, 1999).

Postmodernism developed a critique of modernity, attacking its faith in reason, science, and “metanarratives” such as progress. It challenged, among other things, assumptions of rationality, linear progress, demarcations between “civilized” and “primitive,” and the scientific veneer that hid practices of domination. In case this seems rather abstract, 2 World Wars and several centuries of inhuman colonization and a legacy of racism have, for many, shattered the west's image of progress and human betterment. Precisely the features of modernity that were initially viewed with great hope – science, technology, industry, and democracy – are viewed by many with a “hermeneutics of suspicion.” The pandemic has highlighted the growing distrust in government, big science, media, and industry.

At the beginning of the twenty-first century, the critique of *what is* continues unabated. What is missing is a sense of alternatives – of *possibilities*, a sense of *what could be*. And not just any possibilities, but *positive* possibilities. There are movements *against* the forces that aggravate climate change and environmental catastrophe, against racism and misogyny, but interestingly there has been much less clarity about things one can be *for*.

Critics of environmentalism, as well as gender and racial justice, of what Inglehart (Inglehart, 1977) called “the Silent Revolution,” have it easier, in a way: They can critique, but they also have an image (albeit largely imaginary) of the “good old days,” an image of a past they wish to return to.

One can bravely speak truth to power, but ultimately that always assumes it is *others* who have the power, and that it is highly unlikely the situation will change. As a result, it is also not clear what being *in* power would actually mean. But is it not enough to be against something – or many things? Why would it be necessary to explore possible alternative scenarios? Why would it be necessary to show what is desired, what is aspired to, and in the realm of the possible?

Psychologists differentiate between avoid and approach motivation (Elliot & Covington, 2001). Avoid motivations are for the things we do not want; approach motivations are for the things we do want. In a global context, there are currently more avoid motivations than most people can remember, but the approach motivations are lacking. The assumptions about the global situations are fairly dire, and in the United States and elsewhere there is an increase in narcissism, a turning inward away from the world’s troubles, represented most emblematically by the selfie (Masters, 2010; Nordensvard, 2014; Twenge & Campbell, 2010). One reason why the moon landings are remembered fondly in the United States is because there was a sense of collective mission, an opening of possibilities in what was viewed as a new frontier. There was a sense of exceptional effort, exceptional goals, and exceptional possibilities. That sense of possibilities is now lacking, as the focus is more on avoiding dire possibilities. Even if the dire possibilities are avoided, what is there to look forward to?

Not having examples of the possible and a sense of desirable possible futures reduces the sense of *hope* for the future (Lopez, 2013), a sense that the resistance against domination is not just an ongoing endless Sisyphean struggle, where hope is defined by Edwards and McClintock (Edwards & McClintock, 2018) as “the perceived ability to produce energy and avenues around obstacles to

work toward goals” (p.96). A sense of possibilities provides hope, and without hope there is a further narrowing of possibilities in an ongoing negative feedback loop into inaction and depression. A sense of hopelessness is associated with increased risk of suicide, such as America’s “epidemic of despair” (Case & Deaton, 2020; Gidley, 2001; Reading, 2004). This tragic phenomenon was first associated with middle-aged white men but since then has increasingly included Latin and African-American men, individuals who see no hope for their future. They feel the future does not include them, and the doors of possibilities have all shut.

The focus on critique and specifically the critique of narratives that presented science and western civilization as unquestionably beneficent has created a hesitation in presenting any “positive” alternatives. Thinking about the future has become problematic. Thinking about post-apocalyptic futures is in vogue, and thinking about nonapocalyptic futures has become rather difficult and infrequent. What replaces utopias and progress and the illusion of linear betterment? What are the criteria for “better” futures? Higher wages and GNP?

The Millennial generation will be the first in the USA to not be as well off financially as their parents (Luhby, 2020, January 11). But it is not all economics. The capitalist economy is built on the creation of a sense of lack – the need to have something more, and offers endless possibilities in terms of the new and desirable. The economy is built on the belief that whatever is is not sufficient, that there is always something lacking. The burgeoning New Age movement with its emphasis on personal growth and possibilities beyond the material suggests that in a postmaterial culture (Inglehart, 2018) there is a continuing search for something more – new possibilities, in new domains, and specifically, with meditation, yoga, and a variety of other practices, ways of dealing with stress – a stress that includes having *more* choices than before.

It should not be surprising that during this period of high anxiety, one that the US Armed Forces refer to as VUCA – volatile, uncertain, complex, and ambiguous – along with a greater

focus on the self, there is also a trend toward a monoculture dominated by the language of business and economics (Michaels, 2011). It reduces everything to the lowest common denominator, to what is quantifiable, to metrics, and to return on investment precisely because numbers seem “real” and give the illusion of being unquestionable and “objective” as opposed to emotional and subjective and uncertain.

“Futurists,” as they were once called, have, in very broad strokes, gone from prediction (“The World in the year 2000!”) to scenarios (“What if the Saudis created an oil embargo?”), from a reductionist and linear approach to a more complex approach (Inayatullah, 2002). Scenario planning involves assessing possible future scenarios for purposes of preparedness. It has been very successful as a practice (Ogilvy, 2002). But normative scenarios, scenarios that reflect values and are not so much “what ifs” but “why nots,” are harder to come by. A recurring question that has to be asked in the context of the possibilities of the future and the future of possibilities is, what do human beings want? What is humanity already creating, and will it take responsibility for its creations?

Complex Moods

We have seen how the transition from modernity to postmodernity has brought with it a mood of pessimism, a lack of hope, and a seeming inability or unwillingness to envision positive possible futures. Grand sweeping visions of the future are a thing of the past. But does that mean there can be no visions at all, or only fragments of visions or simply brief rejoicing at the appearance of a new iPhone as a diversion during a revolution of lowered (but still expensive) expectations?

In the binary paradigm of simplicity, optimism and pessimism are framed in a binary, exclusive way. Either optimism or pessimism. Today, the latter prevails. Ogilvy proposes a *tragicomic* mood which combines utopian optimism with the awareness of pessimistic possibilities, and the recognition that tragedy may always be closer than we think (Ogilvy, 2011). In a similar vein, Viktor Frankl referred to the attitude of Tragic Optimism as remaining optimistic in the face of

pain, guilt, and death (Frankl, 1985). Images of the future have often been utopian in nature, and suffused with a sense of (somebody’s) “perfection,” but this “dialogical” approach takes the future out of the realm of the strictly imaginary perfect into the “real,” in the sense that if anything, the real is uncertain and unpredictable.

The shift from a simple opposition of optimism and pessimism to a more complex vision recognizes a broader *range* of the possible, as well as the interaction between the terms. This complex approach eschews the excesses of Pollyanna optimism and desperate pessimism, translates into the ability to act in a way that aspires to wisdom, letting go of desires for perfect solutions and master plans, but nevertheless powerful enough to motivate action.

This approach also recognizes the ecology of action (Morin, 2008b), meaning that ideas and actions with the best intentions can turn into their opposites because once they are included in the web of the world’s actions and interactions they can no longer be controlled. A complex approach recognizes that more possibilities also increase the role of uncertainty, of the unpredictable, and the need to navigate the unforeseen in a way that is elegantly improvisational.

The Heart of Simplicity and Complexity

As we saw earlier, at the heart of modernity was Newtonian/Cartesian science with its emphasis on what Morin calls the paradigm of simplicity. The current impasse or crisis of the future is to a large extent the result of this privileging of simple, decontextualized, binary thinking of the paradigm of simplicity. It is not clear that new alternatives and possibilities can be created with the thinking and the worldview of modernity without reproducing those very problems it created. The paradigm of simplicity’s ability to envision desirable possible future appears to be exhausted.

As an example, the creativity of modernity was fundamentally decontextualized and riddled with hierarchical binary oppositions such as Society/Nature, Objective/Subjective, and Male/Female. It privileged the individual against society, society against nature, and particularly with the rise of

capitalism and the industrial revolution, it viewed the environment, both natural and human, as a resource to be used and abused (Montuori & Purser, 1995). It did not recognize that, in the words of Gregory Bateson (Bateson, 1972), “(T) he unit of survival is organism plus environment. We are learning by bitter experience that the organism which destroys its environment destroys itself” (p.484). Attempting to solve the problems created by the paradigm of simplicity with solutions and alternatives drawn from that same paradigm risks recreating the same problems. Despite claims to the contrary from industry, not all innovation is “good,” nor are strategies of “moving fast and breaking things” and of disruption. The much vaunted Bitcoin consumes vast amounts of electricity and produces huge amounts of e-waste.

With modernity, western creativity was conceptualized as a pair with destruction. This can be seen in Schumpeter’s famous notion of creative destruction (Schumpeter et al., 2011) which has so influenced current notions of disruption in industry. But what is clearly missing in this dyad is the reconciling third, conservation, which is found in the Hindu Trimurti of Brahma the creator, Shiva the destroyer, and Vishnu the preserver. A more systemic, contextual, ecological, complex view of creativity points in the direction of such approaches as regenerative cultures and systemic biomimicry (Wahl, 2016), toward a realm of new possibilities that rejects exploitation in favor of systemic wisdom and win/win collaboration. It also points to a new realm of creativity that has generally been overlooked in the West, namely the creation of environments which foster creativity, with their traditions, support, community, and so on. The possibilities must emerge from a different set of principles – a different paradigm that is fundamentally creative and aims to create win/win rather than zero-sum relations.

American futurists Naisbitt and Aburdene (1990) wrote that “The most exciting breakthroughs of the twenty-first century will not occur because of technology, but because of an expanding concept of what it means to be human” (p. 16). Possibilities are always matched with constraints (Ceruti, 2015). Some of these constraints have to do with what is considered

possible in the first place, and they are constraints that pertain to assumptions about the nature of humanity, what Naisbitt and Aburdene call the concept of being a human. Are human beings all out for themselves? Are they fundamentally good or bad? Trustworthy? Is the world a cruel and unjust place? It has been popular in academia to claim that there is no such thing as human nature, to portray the newborn as a blank slate shaped by culture. This argument has been strongly critiqued by Steven Pinker (Pinker, 2002). Whether there actually is or is not a human nature, human beings certainly act *as if* there is a human nature and act on the basis of their assessment. If I believe other people are out to get me, that it is a jungle out there, and I need to take care of only myself, and if I believe in a zero-sum world, I will behave in a different way than if I believe human beings have a capacity for goodness, kindness, and collaboration and that “we’re all in the same boat.” My behavior is also likely to be a self-fulfilling prophecy, as we saw earlier in the discussion of mutual causality in interpersonal relations. If I act in a way that reflects a belief in a zero-sum world, it is very likely others will respond to me in that same way, and I will in fact be contributing to the cocreation of a zero-sum world.

Assumptions about human nature have historically been made explicit by some philosophers (Fromm & Xirau, 1968), novelists, and psychologists, and more recently they have been heard in the sayings of business leaders as they discuss their successes. Amazon’s Jeff Bezos believes human beings are fundamentally lazy and makes that assumption central to the way Amazon works. ENRON’s Jeff Skilling drew heavily on his (mis?)reading of Richard Dawkins’ *The Selfish Gene* (Dawkins, 1976). The writings of Ayn Rand have inspired many American politicians and technology billionaires to see the world and human relations in purely transactional, Social Darwinian terms (Achterhuis, 2010). These so-called philosophies, these assumptions about the world, are usually not explicit and remain unchallenged but inform what is and is not considered possible.

Deep-seated, often unconscious assumptions and beliefs determine to a large extent what is

believed to be possible and what not (Bateson, 1972). This is why it is essential to integrate the inquirer into the inquiry, to reflect on one's assumptions, one's potential for self-deception, and intellectual vices, and to become more aware of how human beings construct their understanding of the world (Cassam, 2019; Morin & Kern, 1999).

Business theorist Douglas McGregor differentiated between Theory X and Theory Y, Theory X being Bezos' view that humans are lazy, unmotivated, and will not take responsibility, whereas Theory Y argues humans are self-motivated, want to be involved in decisions, seek to excel, and so on (McGregor, 1966). The two approaches lead to radically different ways of organizing, and different beliefs about what is possible and how people should be treated. In other words, from a complexity perspective the two descriptions do not describe dueling versions of *what is*, but rather two choices of what could be, of what is possible and what can and will be created.

For the philosopher Cornelius Castoriadis in order to determine the health of a society – or an organization, or even an individual, I would argue – the key question to ask is the extent to which it can recognize in its institution its own self-creation (Castoriadis, 1997). The question then becomes what are humans always already creating? How are their creations a reflection of their beliefs about constraints and possibilities in the nature and capacities of humans and the world? These beliefs about constraints and possibilities, beliefs that self-define humans, are in fact *also* created by humans, and as Morin would argue, human creation is self-eco-creation, because there is no creation without an environment, without relationship, and without a larger context.

It seems there is little doubt that conceptions of human nature and of human possibilities play a key role in humanity's ability to envision possibilities for the future. We have seen how these conceptions of human nature play a central role in reality-creation. We also know that conceptions about human nature and the world play a role in political orientation. Conservatives, for instance,

generally have less faith in the human capacity for goodness and believe that the world is a more dangerous place than liberals (Jost et al., 2009). This suggests the importance of future research on folk views of human nature and the world, and more clarification about existing research in these areas, something Steven Pinker has attempted to do with mixed reviews.

The Creativity of Possibility and the Possibility of Creativity

Creativity has historically been a key driver of possibilities (Glăveanu, 2018). One of the great gifts of creativity is that it allows human beings to see that the world could be otherwise. Creativity in the west has historically been associated with art, science, and technology, and specifically with the creation of objects or ideas. These objects and ideas have in turn enormously expanded the realm of the possible – one need only think about the transformation of transportation in the twentieth century and the possibility not only of travel, but also of mass travel.

Modernity's image of creativity was the lone genius, the individual creator (Glăveanu, 2010; Montuori & Purser, 1995). Postmodern thinkers critiqued creativity as a concept identified with novelty, originality, and exceptional individuals (Kearney, 1988), but the emerging complex, relational alternative shows a creative process that is not *ex nihilo* but the result of interactions in and with culture(s), with a network of relationships, collaborations, and of everyday creativity (Glăveanu, 2014; Montuori, 2011a). This points to a shift in the discourse and practices of creativity that does not deny the existence of genius, but expands creativity to include everyday relational activities by "everyday" people in all sorts of contexts. In an interconnected, complex, uncertain world, this kind of everyday relational creativity is very much needed and creates an ecology of creativity. The quest is now to understand how creativity can be mobilized to actualize human possibilities, in a process of self-creation.

Modernity's creativity was marked by a focus on the sciences and the arts, on the creation of exceptional products. Beyond products, it is humanity itself that is in need of creativity and

exploration of possibilities. The sociologist Anthony Elliott has argued that self-creation in the form of reinvention is now a new form of individualism – the individual who is continually reinventing themselves drawing on a range of possibilities from plastic surgery to continuing education, new jobs, new communities, new sexual identities, and so on (Elliott, 2013). In a world of increasing possibilities, this also raises questions about the responsibilities humans take for their choices, for the possibilities they choose to explore and embody.

Another area in need of creativity and an expansion in the range of what is possible is the admittedly broad domain of human relationships and interactions. With the increasing diversification and pluralism in the world, learning how to communicate across differences and retaining a balance of unity in diversity is a task that will require a great deal of creativity, and the generation and recognition of many possibilities. There is now a recognition of the actual *existence* of collaborative, relational creativity, which was rather a long time coming in the United States, a highly individualistic country. In younger generations that grew up with the Internet and a networked world, creativity is already viewed as more relational and “everyday” (Montuori, 2011a; Pachucki et al., 2010). The development of generative ways for humans to interact, moving beyond the limitations of zero-sum to win-win relationships, has taken on a new sense of urgency. There is a great need to increase the collective capacity of human beings to thrive together (Donnelly, 2016), finding new ways to collaborate and communicate beyond the polarizing culture of argument, polarization, and entrenchment (Tannen, 1999), and moving toward finding mutually beneficial, win-win solutions for problems. This means both opening up more possibilities and also remaining open to possibilities, in a dual, mutually reinforcing process. In other words, it will require a reflection on human possibilities, on the way that cultures create different conceptions of self and other, and accompanying assumptions and practices about identity, collaboration, and creativity.

Summary

Scientific advances in the twentieth century have outlined a new view of the universe, with profound implications for humanity’s understanding of itself. At the same time, humanity is facing serious challenges ranging from climate change to pandemics to economic inequality and the quest for social justice. If indeed, as many scholars have argued, humanity is currently in a transition between ages, suffering through the death of one age while a new age is as yet unborn, new approaches and possibilities will need to be imagined, articulated, and put into practice. It is becoming increasingly clear humanity cannot face these challenges with a paradigm of simplification, the very paradigm that created the current situation. The paradigm of complexity offers a way to address interconnectedness and interdependence, but also to embrace creativity and take responsibility for creating the possibilities from which the future will emerge.

Cross-References

- [Creativity](#)
- [Crisis of the Future](#)
- [Emergence](#)
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- [Possibility Thinking](#)
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Computer Science

Claude Chaudet

Webster University, Geneva, Switzerland

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Definition

Computer Science is the branch of science that focuses on computational machines, machines whose primary purpose is process data and to automate tasks. It is a discipline that makes a synthesis between applied mathematics, engineering, electronics, signal processing and uses results from many other sciences to progress. It began as a number processing technology and, since most information can be encoded as digital data, it now concerns most aspects of everyday life; it is now the science of information. With the power of today's computers and the everlasting, computer science seems to open an infinite number of possible applications, such that science fiction sometimes appears not so fictional anymore. Nevertheless, computer science is not limited to its applications and the heart of the discipline indeed consists in designing algorithms to solve problems more efficiently and in identifying limits to what is possible under today's computing paradigms and what is not, what is easy and what is complex.

Introduction

Computer Science is the science that studies information and all its manipulations. More than the design of computers, it focuses on data and the algorithms that transform data so that they can be cleaned, stored, communicated, transformed and interpreted to create information that humans use for taking decision or turn into knowledge. It also provides an interface to the physical world

through sensors, electronic devices that acquire data, and command devices that turn data into actions.

It is a discipline that may easily be an emblem for the post-war society. It started as a simple technical tool for the military and scientists and has now infiltrated every aspect of our lives. The computer, as the main embodiment and support of computer science, keeps getting more powerful following Moore's empirical conjectures (Moore 1975). As it lies at the crossroad of other sciences, it benefits from the discoveries in material and quantum physics, electronics, mathematics, and even borrows from sociology and life sciences.

In the present entry, we will first take a historical perspective to understand where we are today and what are the possible evolutions of technology itself, and of its implications for society. We will first look at the computer as the evolution of computation machines. We will then briefly evoke the interactions between fiction and technology before focusing briefly on live topics such as Artificial Intelligence and cybersecurity. We will then look at today's limits and cover a few research directions.

From Computing Machines to Computer Science

The first machines designed to automate computation can be traced back to ancient Greece, with the Antikythera mechanism (abt. 200 B.C.), a mechanical machine that calculates solar and lunar eclipses dates. Throughout history, mathematicians like Al Jazari (abt. 1200) or Pascal (abt. 1600) also built mechanical computing machines, but it is only recently, with Charles Babbage and Ada Lovelace's works in the early nineteenth century, that the real development of complex, programmable computing machines started. All along the twentieth century, the capabilities of such machines increased exponentially, in terms of raw power and computation possibilities, notably catalyzed by World War II and the cold war. Alan Turing made giant steps working on the Enigma, the coding machine German troops

used during the war, and shared his vision of what computers may be. In the 1950s, the electrical relays were replaced by vacuum tubes, then by transistors. At the beginning of the 1960s, integrated circuits opened so many possibilities that they attracted enough investment to create an economic bubble that led to an economic crash in 1962. The evolution of technology did not stop there, though. The IBM 704, one of the first supercomputers built in 1954, was capable of performing 40,000 operations per second. Today's consumer game consoles are able to perform almost 2 trillions of operations per second, and supercomputers get close to 500 trillion operations per second.

Beside the increase of the raw computation power that results from the evolution of the hardware, many algorithms were designed and improved to solve different problems. Monte Carlo Simulation (Metropolis and Ulam 1949), for example, was the first method to use the computers power to estimate, statistically, the value of a numerical parameter in a model by repeating a great number of experiments involving a random variable. It is still used today, in particular in physics and finance. Mathematical disciplines like operations research or graph theory were greatly influenced by the possibility to solve larger and larger problems with a computer and produced results that had an impact on other sciences. DNA sequences analysis, for example, relies on graph theory algorithms (Blazewicz et al. 2018) and the construction of phylogenetic trees uses optimization algorithms (Sardaraz et al. 2012).

Nevertheless, even though computers limits are constantly pushed away, the volume of data acquired by sensors grows even faster. New ways to perform computation had to be imagined to address the growing volume of data to be processed. Processing the data generated by colossal experimental facilities like the Large Hadron Collider (CERN, Geneva, Switzerland), or the National Astronomy and Ionosphere Center (Arecibo, Puerto Rico), requires the collaboration of thousands of computers across the planet. Each computer gets a small part of the data, performs the required calculation and sends back the result to the main processing unit which compiles the

results. This distributed approach, called *grid computing*, has started at a large scale in 1999 with the SETI@Home project at the origin of the Berkeley Open Infrastructure for Network Computing (BOINC) platform (Anderson 2004). It has made possible the confirmation of theoretical results such as the existence of Higgs field or gravitational waves. Today, huge datacenters are also used to perform such calculations in the *grid computing* approach and R&D is currently working on building Exascale supercomputers.

The Post-modern Prometheus

The computer is that complex machine capable to process numbers faster than any human and to extract information and create knowledge from unthinkable volumes of data. It became a source of inspiration for anticipation authors long before it reached the place it holds today.

On the philosophical level, the Age of Enlightenment allowed people to think openly that mankind may not be at the center of creation. This fall from grace opened the gates to a new world for authors and thinkers, who became entitled to imagine of a future where humans would be alone in charge of their destiny. Naturally, they imagined, long before it was technically possible, that we would be able to create androids, human-like robots. From "L'Ève Future" (*Future Eve*) published by Auguste de Villiers de L'Isle-Adam in 1886 to Isaac Asimov's *robots* series, starting with *Robbie* in 1940, androids became the technical version of Mary Shelley's *Frankenstein*. Considering the troubling accuracy of some of these works, it is easy to imagine that scientists who reached the key milestones in robotics were influenced, if not driven, by these visions. They, at least, come from the same desire to give birth to a creation in our own image.

When we look at robotics, for example, it is troubling to see how much progress has been made specifically to mimic the motion capabilities of animal and human bodies. Since Da Vinci's knight (1495), much effort has been necessary to give the capability to walk on two legs to a robot, which only happened in the 1990s, while robotic

arms were able to perform complex movements long before. Concerning interaction, synthetic voices keep getting better, thanks to the increased storage capacity that allows to embed a large number of samples. Natural language processing, the capability for a computer to understand a text expressed in a human language, has applications in automated translation, speech recognition, or text summarization (Chowdhary 2020). Back in 1966, ELIZA (Weizenbaum 1966) was the first chatbot able to mimic convincingly a Roger's person-centered therapy dialogue, paving the way to Siri, Nest, and Alexa.

These research efforts also have implications on the humans well-being. All the progress made to make a computer able to see, speak, understand language or walk are directly transferrable to compensate disabilities. We are now able to build exoskeletons to help paralyzed people, to make devices based on virtual or augmented reality to help the visually impaired, and to use vocal synthesis and brain-computer interfaces to replace speech for people suffering from neurodegenerative and neuromuscular sicknesses like Amyotrophic lateral sclerosis. Beyond creating a human-like robot, we are also making progress in human enhancement, coming closer to post-humanism (Hassan 1977).

Does innovation drive fiction or does fiction creates goals for innovation? When it comes to giving an answer to that question, it is easy to remember only the most visionary works and leave aside all the predictions that turned out to be wrong. Yet, this shows that this technological growth so profoundly changes society that everything seems possible, including dystopias like René Barjavel's novel *Ravages* (*Ashes, Ashes*, 1943), which was one of the first novel that identified the hazards behind technology. Since then such scenarios have now become part of the canon of fiction.

People Fear What They don't Understand

Arthur C. Clarke wrote the famous and over-quoted adage that “*Any sufficiently advanced*

technology is indistinguishable from magic.” (*Profiles of the Future*, 1973). Today, computers, networks and algorithms have become so complex that only experts have sufficient knowledge to truly understand what is behind the curtain and a fear of technological progress results from the difficulty people have to trust what they don't understand. Artificial intelligence, in particular, catalyzes all the fears, since it is particularly opaque, even for the professionals, and infiltrates in all aspects of our lives.

Artificial Intelligence also took advantage of the increase in computation power and the development of parallel and distributed computing. It is not a new idea, though, since Alan Turing already imagined that machines could be able to make decisions (Turing 1950). Artificial intelligence as a discipline was officially born in 1956 (McCarthy et al. 2006) and has known ups and downs over the years. Long quartered to recreational applications and demonstrations of power, it is only in 1997 that IBM's deep blue finally beat Chess champion Gary Kasparov and in 2015 that Alpha Go beat Fan Hui at Go, proving that, with sufficient power, computers can take series of decisions that form a strategy. There are many algorithms and techniques to make a machine learn to take decisions (Samuel 1959). That process often relies on a statistical learning process, in which an algorithm analyzes a huge number of situations and gradually learns which ones produce desirable outcomes and which ones should be avoided. The algorithm configures itself automatically based on experimental results, rather than being explicitly tuned by programmers. Algorithms therefore evolve to become black boxes and there is a natural concern that nobody is able evaluate what they actually do, since no human can make sense out of the thousands of parameters they use. There is now a promising research area that deals with *explainable artificial intelligence* (Došilović et al. 2018) to overcome these issues.

Artificial intelligence, however, needs huge databases of examples before it is able to learn something, that's why its evolution is concomitant to the rise of big data. The 2000s saw the birth of companies like Google or Facebook with a new

business model that relies on a more efficient advertisement, since it is targeted to the watcher. These companies rely on massive data collection to profile users, which only became possible with the rise in storage and processing capabilities. The era of data centers, cloud computing and big data, i.e., databases too huge to fit on a single computer or server, started with these big players and now concerns many virtual and physical services. Digital companies now all collect data to try to better understand their ecosystem and try to extract knowledge from that data with the help of statisticians, who evolved to data analysts. This trend is expected to further increase, thanks to the rise of the Internet of Things that has already started connecting all sorts of appliances to provide connected services.

We therefore have a connected world, in which commercial companies and institutions collect data continuously and are able to profile citizen. The use of these technologies is so widespread that our society and even our individual lives are now dependent on system so complex that it became frightening. That complexity also benefits malicious people who exploit cracks in the system to get access to valuable information, to various systems, or to destabilize organizations. In response, domains like cybersecurity and privacy have become incredibly active areas of research and development. These areas depend strongly on essential building blocks like cryptography, architectures, procedures and protocols, but are constantly evolving. When it comes to security, the world looks like a chessboard where defenders try to find and implement the good compromise between the protection of their assets and the usability by legitimate actors, while attackers try to find new strategies to get access to the information. For every new attack there needs to be a new or updated defense mechanism and that game has gone beyond the technical level. Today social engineering uses human manipulation, tricking users to disclose key information that can be used to get access to digital resources. It is an endless game in which the defender is almost certain to lose a battle sometimes. Since technology cannot provide any guarantee here, the problem has gone beyond the pure technical aspects

and more and more laws are written to define and enforce good practices. The European General Data Protection Regulation (GDPR), for example, limits the process of collecting data on European citizen, making the assumption that companies cannot disclose what they do not possess.

The Sky Is the Limit

Computers today therefore seem able to process and understand data, to make decisions, to interact with humans and have become the most complex industrial realization of mankind, with all the benefits and the dangers it creates. Advances in all the sub-fields of computer science seem to open an infinite number of possibilities whose only limit is our imagination. Nevertheless, there are limits to our capabilities. Computer Science, as a scientific discipline, can be divided between a branch that designs algorithms, finding new ways of solving problems like introduced above, and a theoretical branch that identifies possibilities and limits of technology. Some problems are inherently hard to solve, in the sense that they require a tremendous amount of computation to find the exact solution, despite their apparent simplicity. The traveling salesman problem (Applegate et al. 2007), for example, identified by Hamilton and Kirkman in the early nineteenth century, consists in finding an itinerary that passes through a list of cities once and only once, while traveling a minimal distance, given the inter-cities distances. Understanding the problem and finding “good” solutions seems intuitive. However, finding the *optimal* solution in any configuration requires comparing all possible paths, whose number grows exponentially.

That issue, called complexity, is a problem that concerns systems and algorithms scalability, i.e., their ability to find the solution for larger scenarios. On a machine that can process a billion of paths per second, solving a 20 cities problem would require more than 70 years of computation. Of course, parallel computing can help by dividing the exploration among multiple processors, but the problem is inherently complex, which means that it becomes much harder every time

its size grows. In that particular problem, like in many others, instead of chasing the optimum, we may be satisfied with a correct and fair approximation, which is much easier to achieve.

Several algorithms do use that complexity as a tamper-prevention mechanism. Ciphering, a part of cryptography, is based on that principle. A message is encoded into another message by an algorithm that ensures that it is impossible to come back to the original message without knowing the key used for the encoding. Decoding the message therefore requires trying every possible key, and the number of possibilities grows with the size of the key, up to the point where the only way to decode a message is to *know* the deciphering secret. The Blockchain technology, supporting the bitcoin currency, solely relies on that computational difficulty to ensure the integrity of a database of transactions distributed across multiple computers.

Research Today and Milestones Ahead

When looking at the evolution of computer science over the past decades, it is hard to find an aspect of our lives that has not been tainted by digitization. Science, communication, economy, health, public safety, education, art, marketing, assisted living, transportation, environment monitoring, etc. were all transformed by computers and algorithms. Research today continues in all areas to improve algorithms, to find new computation paradigms, to find new or better applications, to make it more accessible, safer, but also to understand and control its effect on human societies, on the way we interact together.

It sometimes feels like the research today is only incremental, then breakthrough concepts like deep learning or blockchain give a new breath to the community and to creative people who find new usages to these innovations. Many times, society felt like we had reached the end of innovation, and yet revolution after revolution, the future still seems full of promises. Nevertheless, there are some inherently hard challenges to overcome within computer science itself, but also in close disciplines like electronics or energy.

First, the increase in computation power has been driven by the miniaturization of the transistor. We are now close to a size of 8 nanometers below which quantum effects cannot be neglected anymore. We may be close to a limit here, but we may also learn how to deal with those effects, if not use them. Several technologies already use quantum effects. Solid State Drives are based on the tunnel effect for example and some research teams are working on quantum computers using quantum superposition and entanglement to make machines able to process a massive volume of data in parallel. Even if there are fundamental problems resulting from the quantum decoherence, the loss of quantic properties at a macroscopic scale, that technology should sooner or later provide a way to make a leap in computation, yet it remains limited to a particular set of problems.

More than a challenge, solving the issue of the energy is a necessity. Electronic devices need electrical power and processors are particularly hungry devices. Our whole society is built on information systems and communication networks. If energy were to become scarce, it would have a huge impact on the economy, but also on all aspects of our lives. There is, of course, research to find new sources of energy and to better use the ones we already have, but computer scientists themselves also try to reduce the energy consumption of the devices. Green computing and green networking have been active topics in the computer science field for more than a decade and try to look at complexity in a different way: how to build better algorithms, which require less energy to find a suitable solution. On the hardware level, asynchronous circuits could be a game changer, since a huge amount of energy is consumed by the existence of a clock signal and its propagation across the millions of transistors that compose a processor.

Conclusion

There is no possible denial that computer science has changed society since it reached the everybody's pocket. Behind that technology lies

the possibility to better understand our world and societies, but also to reshape them. Worldwide challenges like poverty, environment or education could be impossible to solve without the assistance of these devices. Nevertheless, computer science is a tool, which open possibilities in its applications, and solutions will not come without a will to go in the proper direction. Like all fundamental advances, it is also a two-sided coin, which, aside from the unlikely dystopian scenarios, bears the potential of increasing our dependence on energy and accelerate our depletion of non-renewable resources.

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Concept Formation

Valentina Fernández Guzmán, Ingrid González-Palta and Antonia Sutil Larrain
Universidad Alberto Hurtado, Santiago, Chile

Abstract

In this chapter, we argue for *the possible*, as that which is opened through the juxtaposition of different perspectives in the unfolding of language, as both the main field of, and transformed by, concepts. We follow Vygotsky's (1934/1987) theory of concept formation to understand concepts not as mental and neutral representations but as different and related perspectives that unfold through specific ways of speaking and thinking in a horizon of positioned meanings (Bakhtin, 1981). The particular case of argumentation as a discursive practice in forming the possible, and, through it, forming concepts, is discussed. The political and social implications of this understanding are addressed.

Keywords

Concept formation · The possible · Sociocultural theory · Language

Introduction

Although the notion of *the possible* has been addressed throughout philosophical thought, it has rarely been explicitly discussed in the field of psychology. This limited attention is surprising, given psychology's concern for psychological processes embedded in a diverse and cultural world (see Glăveanu, 2020). According to Glăveanu (2021), psychology pays more attention to the limits and constraints in human psychological potential than it does to processes

and consequences. Despite this, *the possibility* can be traced in various psychological concepts such as imagination, creativity, and counterfactual thinking, among others (Glăveanu, 2021). In fact, sociocultural theory is one of the perspectives that can illuminate the notion of *the possible* most productively because it assumes that the psychological mind arises *in* and *through* a perspectival world as a constitutive element. In this sense, it is not isolated individuals who interact with cultural diversity. The individuals themselves are constituted by the social world in which they participate. From a sociocultural perspective, authors such as Dewey (1966), Mead (1934), Vygotsky (1934/1987), and Bakhtin (1981), among others, have positioned the idea of otherness as a fundamental notion of human development insofar as it originates in the movement of response to multiple perspectives. In this way, sociocultural assumptions are a crucial starting point for understanding *the possible*.

According to Glăveanu (2020), *the possible* is a relational phenomenon embedded within self–other, person–world relations. Specifically, *possibilities* find their foundation in differences, particularly in the difference between perspectives. From this viewpoint, what would open the entrance to the possible in our existence would be the relationship with more than one perspective. This sociocultural perspective understands the possible not as something contrary to what is actually “real” but as an action that shapes – through a perspectival world – the individual’s experience in the real. In this sense, the antithesis of *the possible* would be the denial of multiple perspectives rather than the real experience itself (see Glăveanu, 2020).

This way of understanding the notion of *the possible*, not as the opposite of the actual but as the recognition of a perspectival world, can illuminate one of the essential psychological activities for human development: concept formation. Therefore, this chapter seeks to answer the question: What place does *the possible* occupy in relation to concept formation? To answer this question, it is essential to understand what is proposed by Vygotsky (1934/1987) as an alternative

explanation to the traditional way of understanding concepts as mental representations. It is argued that *the possible* occupies a central role in concept formation if it is assumed that concepts are not predefined mental entities but social activities unfolding through speech.

Vygotskian Perspective of Verbal Thinking

Thinking and Speech as Intermingled Processes

Vygotsky (1934/1987) argues that the fundamental difference between the non-human and the human is that, in the latter, verbal thinking mediates psychological functions. This, however, does not occur for biological reasons; it occurs during human ontogenetic activity, and Vygotsky argues that language learning plays a crucial role. However, why is language crucial for psychological development in a person’s ontogeny?

According to our reading of Vygotsky (1934/1987), children are progressively immersed in a verbally performed world. Experiences are not randomly or idiosyncratically organized but generalized through a language that is already there, before children are born. Every use of language implies a particular way of generalizing a particular stream of experience, that is, of treating it as structured in a relative, repeatable way. When they start to perform language agentically, children start to generalize through those words; that is, they start to co-generalize with virtual others that have populated those words before. In other words, children with language begin to think, to generalize, as other speakers populating those words have done before. Language performance then opens up the encounter, the interdependence of I–other perspectives: that of many speakers performing that form of language before the child, but also the child’s own unrepeatable ways of generalizing with the same words. Language performance, therefore, not only implies a sequential chain of responses but also produces the juxtaposition in the same stream of experience of different perspectives occurring and co-influencing their formation at the same time.

Moreover, through the child's verbal performance of alien words, and its appropriation, these juxtaposed and co-influencing ways of thinking progressively become an integral part of how the child thinks. Language performance is not only for communication but also for collaborating psychologically, and, through language, social and initially external forms of collaboration become part of the individual functioning: "Each higher form of behaviour enters the scene twice in its development – first as a collective form of behaviour, as an inter-psychological function, then as an intra-psychological function, as a certain way of behaving [...] into the practice of personal behaviour" (Vygotsky 1997, p. 95). This process, which Vygotsky refers to as internalization, is central to children's development.

Vygotsky's Theory of Concept Formation (1934/1987)

Vygotsky (1934/1987) describes, in Chapters 5 and 6 of *Thinking and Speech*, his theory of concept formation. Specifically, Vygotsky understands concepts (or word meanings) as generalizations, that is, "operations in which a particular and unique event is treated as a class of events" (Larrain, 2017, p. 3). Concepts then are actions or movements (they change), something people do when they think: people do not generalize in the same way through ontogeny. The way of generalizing change is prompted by the different verbally organized social activities in which people participate during their lives. Vygotsky considers the period that goes between language learning and adolescence to be key to concept development.

To say that concepts are actions and not entities, and that these actions change through development, implies understanding concepts in a way that is radically different from the traditional way. Concepts have traditionally been understood in psychology as mental representations associated with cognitive categorization processes, mental categories created from similar characteristics (Braisby & Gellatly, 2012), and as organizing information and representing the world through an algorithmic or non-natural language. This traditional way of understanding concepts has

encountered various difficulties, such as cases that cannot be logically categorized (borderline cases). Based on this explanation, difficulties or disagreements are interpreted as a lack of knowledge, which can be resolved by consulting official knowledge. In this sense, concepts are already defined (based on shared properties or specialized knowledge). Another problem with traditional understandings of concepts is that they do not account for the particular ways in which people conceptualize and think about concepts. For instance, Medin et al. (1997) observed how participants with different occupations (e.g., maintenance workers, landscapers, and taxonomists) grouped trees into taxonomies with marked differences. In other words, when these people defined the same concept (tree), the ways of thinking about it were significantly different. A third problem related to understanding concepts as definitions or established knowledge is how such a view limits the possibilities for conceiving the process of concept development: concepts would be incorporated by the minds of individuals only as a matter of accessing information.

On the contrary, from the perspective that is adopted here, a concept is not a dictionary definition but a movement, an act of generalization. Concepts are movements of thinking through people's experience in generalized ways. Vygotsky (1934/ 1987) argues for different structures of generalization emerging through development. When children start to talk and use a certain word, they start generalizing with that word in an idiosyncratic, unstable, perceptual, and syncretic way. However, even with these characteristics, these generalizations are not completely individual but rather socially influenced, because children encounter words and their performance in already organized social activities that direct their own generalizations. Therefore, there are gaps between adults and children using the same words, and at the beginning, these gaps are evident. However, when generalizing with words, generalizations necessarily occur through a social and dialogical dynamic in which at least two perspectives co-occur in the same stream of life. That is why, in persisting in the social use of language, children's generalizations undergo a

process of constant transformation: from contextual and idiosyncratic generalizations (complexes or spontaneous concepts), children's thought moves to conventional and systematic ways of generalizing (scientific or "true" concepts). Thus, it is evident that, for Vygotsky, the concepts are not the product of previous mental processes of categorization; rather, concepts are developed continuously whenever language is used.

It is interesting to note that the last phase of the development of complexes (or spontaneous concepts), according to our reading of the author, called pseudo-concepts, are children's generalizations that apparently coincide with adults' generalizations but still qualitatively differ. This observation is relevant because it shows that, for Vygotsky (1934/1987), the use of the words does not coincide with concepts: one can use words in a similar way but still generalize with those words in different ways. These pseudo-concepts are eventually qualitatively transformed into "scientific concepts" when children, through the use of a certain type of language, form a system of meanings; that is, they generalize through the systematic and conventional relations between meanings. The system of meanings is basically a relational verbal web that is formed and which involves different types of relation: hierarchical relationships (longitude) and relationships of commonality (latitude). Therefore, systematic social experiences such as instruction, and their particular ways of performing language, prompt the development of this structure that organizes generalizations in adult life. Hereafter, generalization becomes more decontextualized and verbally dependent, and more conventional and repeatable. This does not mean that at this stage words coincide with concepts, because, even with the same words, different paths of generalizations (different relationships) can be performed. Moreover, as generalizations unfold through a system, different alternative generalizations are possible and are systematically related to, and interdependent on, one another. This diversity of possible juxtaposed paths unfolds in the language in the reconstruction of the concept. According to Larrain et al.

(2019), "scientific concepts can be thought of as occurring through multiple equivalent conceptual paths emerging when speakers only have at their disposition more than one way to equivalently think of a word (a semantic system)" (p. 458). This relational web allows people to make their own generalizations; that is, it opens the door to a certain type of meta-thinking.

The Role of the Possible in Concept Formation

From Vygotsky (1934/1987), it can be hypothesized that *the possible*, as the encountering of different perspectives or alternative ways of seeing reality (different angles), enters the scene for the first time when the *other's way of doing or thinking* appears to the child. This happens only because the child starts using a language that they find is already there (Bakhtin, 1981), laden with intonations, positionings, ways of generalizing, or ways of affecting and being affected by. Moreover, the possible is not only discursively created but also conceptually structured and transformed. In saying this, we mean that the possible, as the juxtaposition of different perspectives, is not there as static images but as a creative activity through which, and in which, concepts play an important role, regardless of their stage of development. Perspectives always have a conceptual nature, in the sense that in a way they involve specific ways of generalizing. But they do it because they emerge in a collaborative performance of language, which in itself opens up whole fields of perspectives sedimented in the linguistic forms that are singularly performed. As such, the possible involves not only generalizations but also generalizations occurring in a dialogical relation of interdependence that change and vary along development. While, at the beginning of development, the possible is structured as social generalizations in dialogical relationships that influence one another in a syncretic and unrepeatable way, in adolescence the possible is transformed by the conventional web of generalizations knitted throughout instructional social

interactions, which refer to one another in repeatable ways. Consequently, the possible develops micro and ontogenetically.

A Vygotskian perspective is coherent with the possible insofar as the concepts are conceived as movements of co-affecting and co-occurring thinking paths establishing dialogical systematic relationships of influence between one another (and not as neutral, unique, and immutable entities). In other words, concepts are more than information storage; they are acts of verbal articulation (movement) of diverse positions. This idea gives *the possible* a fundamental place in concepts. Indeed, a concept could not be conceived without *the possibility* because the process itself implies paths of meaning. Each movement of thought is illuminated through the light of possible meanings and perspectives.

For this reason, *the possibility* not only determines what a concept could become but also determines what it is. It is impossible to understand concepts without acknowledging that there are alternatives. Thus, concepts exist not as crystallized products but as articulations of possibilities. The possibility is the background of a concept as different trajectories that are potentially passable depending on the use of the language.

This Vygotskian conceptualization of understanding concepts considering *the possible* (thought acts of potentially passable meanings) resonates with Bakhtin's (1981) theory of language. For Bakhtin, language is understood not as an abstract language system but as a discursive practice that organizes social life. Bakhtin asserts that every utterance is dialogical and has a response structure, as they always anticipate and respond to other utterances. From this perspective, language lives in a chain of past, future, real, or imagined positions that sediment social life. Utterance always emerges in a virtual field of evaluative/affective positions supported and produced by social and cultural life (Haye & Larraín, 2011). From there, any act of understanding is mediated by a world of perspectives in tension. In other words, acts of understanding are produced by a world of possible voices (Haye & Larraín, 2018).

Thus, for Bakhtin (1981), the emergence of each discourse takes place in a field of contradictory, virtual, past, real, and imagined positions, value judgments, and points of view. Thus, the nature of *the possible* in language can be understood as the field of voices in tension. In other words, the virtual field gives meaning to all that exists (e.g., interpretations, alternative possibilities, a sense of understanding). In this field, intellectual thinking for concept formation would not occur in a cognitive network of neutral statements. Language as a field of diverse evaluative positions implies understanding that the formation of concepts is not a rational activity dehydrated from social, affective, and political positions.

Considering *the possible* (from a Vygotskian and Bakhtinian approach), concepts are not neutral products but evaluative ways of moving that articulate a social field available in a given time and space.

In summary, when people begin to perform language, a horizon of possible meanings and perspectives begins to open up and materialize through these uses, because the other offers a specific way of seeing and interpreting the world through historically and culturally situated uses of language. Consequently, language practices materialize cultural and social possibilities (i.e., a world of perspectives). In this sense, the place of possibility resides in the ways of speaking and thinking, embedded in the cultural practices in which one participates. In other words, through language, the possibility is semiotically mediated by communities' cultural meanings.

Argumentation as a Type of Language Performance That Prompts the Conceptual Aspect of the Possible

So far, different types of language use have been referred to as key to concept formation and the creation of the possible. In this section, a particular example is explored: the case of argumentation as a macro-speech structure. Empirical evidence shows that argumentation could be a powerful practice for concept formation and transformation (Asterhan & Schwarz, 2016; Asterhan &

Babichenko, 2015; Larraín et al., 2021). Argumentation is traditionally conceived of as the socio-discursive practice in which one or more speakers deal with a controversial issue through the critical examination of alternative perspectives, thereby assessing the acceptability of controversial ideas (Perelman and Olbrechts-Tyteca 1969; Toulmin 1958).

According to Leitão (2000), when people raise and construct an argument, they conceptualize it in a particular way, justifying a specific position. When a counter-argument emerges (either from someone else or from within oneself, as in internal speech), new possibilities for alternate meanings (unaccepted or contradictory ideas) open up. Eventually, these new possibilities can be internalized in a more complex and comprehensive conceptualization. In fact, according to Reznitskaya and Wilkinson (2017), a good argument can be defined as a position that not only justifies but also articulates alternative paths.

When arguing and encountering alternative and contradictory ways of conceptualizing the same event, not only does one become aware of different possible trajectories that support a position but one is also able to articulate and respond to this field of contradictory positions (Bakhtin, 1981). From here, a good argument would be a particular articulation of possibilities and alternatives related through contradiction, which in turn would broaden the understanding of something (González-Palta & Larraín, 2021). Consequently, when arguing, what is possible is updated to respond to a demand for the articulation of meaning.

From this perspective, the effort to articulate the field of *the possible* is the reconstruction of the virtual world from particular modes. By arguing, *the possible* is shaped, its network updated to respond to a demand for meaning. If one defines a concept by illuminating only one possible path (denying perspectives), the concept's contradictory and unaccepted paths are invisible. The argumentative practice, understood as a discussion of diverse and contradictory ideas, brings to the fore implicit paths not travelled by a concept, demanding the articulation of the various trajectories of *the possible*.

Therefore, the challenge of learning and understanding any concept in instructional contexts, especially concepts that involve a complex and contradictory path (at different educational levels), calls for their exploration and articulation from a framework of what is possible, precisely because this responds to the nature of concept formation. For example, the role of argumentative questions gives rise to imagining new articulations and invites one to go through alternative paths (even when they are incorrect or not accepted), which fulfil fundamental processes in understanding and reconstructing concepts.

On the contrary, understanding concepts without an idea of *the possible* would only render an already accepted concept path, a unique definition. Such unidirectional understanding of concept formation is what is usually observed in instructional spaces. Similarly, when dialogues only add instead of discussing reasons, it is not possible to go through a field of position-meanings because paths are only travelled in one direction. Instead, the discussion of different and contradictory ideas (through arguments and counter-arguments, imagining opposing scenarios, etc.) allows a complex framework to be traversed.

In other words, true concepts are nothing more than the articulation of possible paths (alternative meaning trajectories). When responding, anticipating, and critically evaluating alternative paths, a concept is presented facing *the possible* (a process of articulating among other possibilities).

From this perspective, argumentation as an act of anticipation demands that one imagine a field of possibilities: an effort is made to produce *the possible* through functional uses of language that sustain said production (Larraín, 2017). In other words, participating in an argumentative dialogue would promote the emergence of novelty in the formation of concepts. However, as Vygotsky would argue, language practices are historical, leading novelty to emerge in the particular recreation of a horizon of meanings.

In this sense, the functional structure of argumentative language directs thought, demanding an effort to imagine – not only to produce and go through possible alternatives but also to articulate and organize thoughts. An effort is made to

produce *the possible*: to make implicit perspectives visible; to articulate thoughts in unique and specific ways. In short, the place of *the possible* in language (particularly of argumentative language) is critical not only for the development of verbal thought and concept formation but also as the place to imagine and produce a horizon of possible, contradictory, and potentially passable meanings.

Conclusion

The goal of this chapter was to understand the place of *the possible* in concept formation. Acknowledging that possibilities and perspectives have a role in concept formation, this chapter set out to explain theoretically how and why this occurs. Rather than proposing a new theory of concept formation, the idea was to address *the possible*, from a sociocultural theory (Bakhtin, 1981; Vygotsky, 1934/ 1987), as a way to understand concept formation.

Specifically, this chapter argues that (i) *the possible* emerges only with the use of language (collaborative and historical performative language); (ii) *the possible* emerges in the dialogical nature of concepts given their dependence on language (field of perspectives knitted throughout social interactions); and (iii) *the possible* is conceptually structured and transformed.

Therefore, it is important to recognize that what is called *the possible*, from a Vygotskian perspective, is necessarily discursively constituted and conceptually mediated. Concepts such as acts of generalization or historical and cultural ways of thinking will cross any human experience, even with understanding their role in imagination and affect (or any other psychological process). This is explicit in Vygotsky even when the idea of personality is discussed in *On Psychological Systems* (1997). Consequently, the conceptually organized and dialogically constituted of *the possible* runs through intellectual, artistic, and emotional (material-vivid) experience. For example, the possibilities of being affected when appreciating a painting are conceptually mediated and discursively constituted: the affected experience is materialized by a

language performed by historical and cultural forms through social interaction. This idea of *the possible* is supported by an assumption about language that is radically different from the traditional. It is about considering the language of psychology as an embodied activity, as a performance between socioculturally situated individuals (see Bertau, 2014). Moreover, the dialogical and performative notion of concepts implies that *the possible* is in motion and develops historically. What is possible in concept formation would materialize in language performance, across human development, and would be mediated by cultural and historical practices.

Finally, there is the question of why it is relevant to specify, theoretically, the role of *the possible* in concept formation. A traditional understanding of concepts as fixed entities or products, not as a social activity (a process that gives rise to *the possible*), would have consequences from an educational, social, and political point of view. Understanding concepts as products, or from the impossible (see Glăveanu, 2020), would imply formulating an explanation that would limit the understanding of human development in crucial aspects for concept formation. This is because such an approach makes the transforming and material role played by specific uses of language invisible to learning processes. In other words, concept formation would not occur if specific language uses could not trigger, illuminate, and formulate possible, contradictory, or unaccepted alternatives (the field of *the possible* in concepts). The traditional view of the meaning of concepts, as abstract and neutral representations, is problematic. This is because it makes it difficult to imagine more precise learning devices that properly respond to human thought processes and the educational demands of an increasingly culturally diverse and complex society. Also, a traditional view neutralizes and dehydrates the intellectual activity involved in a socially situated field of thought (Bakhtin, 1981). Understanding conceptualization by denying *the possible* (possibility of speech perspectives) limits educational spaces for thought. This closes down the possibility

for collaborative discussions and deliberations on the basis of different perspectives, therefore limiting the possibility to arrive at more just and creative solutions to the multiple challenges, crises, injustices, and complex transformations that today's society demands from us (Dewey, 1966).

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Conflict of Centractions

- [Socio-cognitive Conflict](#)
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Conflict of Perspectives

- [Socio-cognitive Conflict](#)
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Consciousness

- [State of Consciousness](#)

Constructive Memory

Brady Wagoner

Centre for Cultural Psychology, Department of
Communication and Psychology, Aalborg
University, Aalborg, Denmark

Abstract

Constructive or reconstructive memory describes the process by which we update our memories in light of new experiences, situations, and challenges. Although the literature on the topic is far too vast to cover in a short review, we can identify two broad research approaches to it. One conceives “constructive” as a vice of memory and aims to identify the factors that increase “errors” and “inaccuracies” in memory. In contrast, for the other “constructive” is a virtue in that it is indicative of the creativity and adaptability of memory to meet a changing world and is closely connected to imagination. The former approach tends to employ an experimental methodology, whereas the latter tends to study so-called “natural” contexts of remembering. This chapter begins with a reflection on the inherent ambiguity of the past and the dilemmas and possibilities this creates in human life. It proceeds to shed further light on the two meanings of construction through a review of some key studies. This is followed by an explanation of the schema concept, which is widely used in both research approaches. The chapter then explores the long discussed relationship between imagination and memory. It concludes with a look at the intertwining between individual and collective forces in remembering from the perspective of socio-cultural psychology.

Keywords

Schema · Imagination · Inaccuracy ·
Sociocultural

Introduction

The past is a mysterious thing. Events happen to us but our temporal distance from them leaves many ambiguities when we attempt to recall and interpret the past. We tend to mix details from different events and shape our accounts to fit current goals, which also can create important divergences in the way people tell stories about the “same” happenings – what is often called the Rashomon effect, after Kurosawa’s famous film by that title. Both in our own uncertainties about the past and in the conflict of testimony, memory creates a field of possibility rather than something to be taken at face-value, settled once and for all. Some psychologists have even argued that entire events might be unwittingly confabulated – Loftus and Ketcham (1994), for example, have said a well-meaning but suggestive therapist can implant memories of child sexual abuse in their adult patients. Even in the event that we take our memories as faithful accounts of the past, we might still interrogate them for what *might* have happened had something been different (i.e., counterfactual thinking about the past). From an approach quite different to Loftus and her colleagues, Brown and Reavey (2015) have pointed to how survivors of child sexual abuse will often question their own agency in the situation – “could I have acted differently?” They argue that keeping such ambiguities alive can be productive for developing the self and opening up action possibilities in the present. In short, we can say that possibility is a key part of constructive memory in that the past is never fully settled, which ensures its functional value within the ever-changing environment. Most contemporary theories of memory would agree on this point but there nonetheless exists opposing research approaches with differing assumptions to the topic.

What Makes Memory Constructive?

When Ebbinghaus (1885/ 1913) inaugurated the psychology of memory he conceived it using the metaphor of inscription: Sensations are impressed

on our mind leaving traces which can later be recalled. Although his new experimental method of remembering nonsense syllables was an innovation, conceptually he was directly in line with Plato and Aristotle's theories a millennia and a half earlier. In the early twentieth century, thinkers began to question the understanding of memory as a *substance* or *thing* in the mind and began to see it instead as an *activity* or *process* taking place between a person and their world. This perspective is clear in the process philosopher Henri Bergson's (1911) *Matter and Memory*, sociologist Maurice Halbwachs (1925/ 1992) *On Collective Memory*, and psychologist Frederic Bartlett's (1932) book *Remembering: A study in experimental and social psychology*, but the idea can be traced back much earlier to Lotze's notion of the "activity of memory." In all cases, it is because the past is mobilized to deal with current actions that it is flexibly adapted and as such is highly functional for human life. As Bartlett (1932) put it, "The external environment... partially changes and in part persists, so that it demands a variable adjustment, yet never permits an entirely new start" (p. 224).

Whereas Halbwachs (1992) analyzed how different collectives, such as the family, religious group or social class, organize the memory of their members, Bartlett (1932) began his study by having participants repeatedly recall foreign folk-stories, after 15 min, a week, several months and even years later. His choice of unfamiliar stories was deliberate in that he wanted to foreground how the stories are transformed in memory when they are interpreted through a different set of conventions. Most famously when participants recalled a Native American story called *War of the Ghosts* they tended to change "canoes" to "boats," "hunting seals" to "fishing," add details to create a smoother narrative, and rationalize away its puzzling and supernatural elements. Wagoner and Gillespie (2014) show that when people do this memory task, they tend to make numerous suggestions about what might have been in the story and then evaluate them on how best they fit and how familiar they feel. In this way, we construct memories by gradually

approximating an account from a set of *self- or other-generated possibilities*. These reflections might be based on fleeting imagery, embodied metaphors, narrative expectations, etc., which are then woven together in an integrated account. For Bartlett (1932), this is what gave constructive remembering its hesitant and erratic character, in the process of putting together these fragmented pieces.

Since the 1960s, psychologists have tended to interpret these findings to mean that memory is always highly unreliable. Researchers operationalize the notion of constructive by counting up errors and inaccuracies in recall when compared to the original material. In this approach, literal recall is considered to be the highest goal and any deviation from it a vice of memory (Wagoner 2017). In contrast, for Bartlett and many earlier thinkers, memory's constructive character was its virtue, in that it highlighted creativity and flexible adaption of experience in a changing world. A clear milestone in this shift of focus can be seen Gauld and Stephenson's (1967) study which aimed to show that the "reconstructive" process identified by Bartlett was the result of his loose task instructions rather than something inherent to memory. As such, they told participants to recall *War of the Ghosts* "fact for fact" immediately after reading the story and counted the number of extreme deviations from the original that they called "errors." They thus intended to do the exact opposite of Bartlett by creating a situation very different from the way we remember in everyday life. The assumption is that one could isolate a pure faculty of memory, uncontaminated by other influences and guesswork of the participant – thus, treating memory as a thing rather than an activity. While they did find fewer errors when compared to Bartlett's studies, more recent research has showed that this effect disappears after a week, so that there is no difference between strict and loose task instructions (Bergman and Roediger 1999).

Even within the more limited understanding of constructive, there has been a shift from away from an Ebbinghausian focus on how much is remembered (i.e., quantity oriented) to an

exploration of the *correspondence* between original and recall (i.e., quality oriented) (Koriat and Goldsmith 1996). However, the two are often combined in research, when quantity of information and distortions to it are both analyzed. The focus on errors and distortions open up for the investigation of “the possible” but only in the negative and limited sense of being deviations from the truth, and as such are considered potentially dangerous and best avoided. This has obvious utility in contexts such as a court of law where accurate testimony is essential, but should not be the ultimate standard for evaluating memory across social contexts (Brown and Reavey 2018). More often than not, recall functions more to orient and motivate action, bond with other people, and construct personal and social identities than to create literal representations of the past. The notion of constructive remembering as a flexible adaptation thus holds much more promise for investigation into *the possible*, in that reflection on the ambiguous past becomes a source of invention in the present, opening up new pathways towards the future. This was in fact also the view of the medieval craft of memory (Carruthers 2008), which is why *invention* and *inventory* share the same root: to invent one had to have developed an organized and flexible memory (see section “[Imagination and Memory](#)”).

The Concept of Schema

If memory is constructive then the idea that experiences are stored as static impressions or traces in the mind/brain until they are recalled is deeply inadequate. Instead, experience comes into being and is remembered in relation to other experiences and the context one finds oneself. People accumulate experiences into an active and developing pattern which creates the organized setting for new encounters with the world. Bartlett (1932) called this background of pattern making activity “schema,” which has become the preferred term for memory researchers since Neisser’s (1967) employed it as a key concept for the new sub-discipline of *cognitive psychology*. However, while Bartlett remained wedded to a bio-

functional approach to living organisms that must act in a changing environment, Neisser and cognitive psychology more generally adopted a mechanical computer metaphor: Schema were said to be the program instructions for coding information put into the system from the outside. For example, we tend to remember schema consistent items of a graduate student’s room, such desk, calendar, pencils, books, etc., at a much higher rate than inconsistent items, and where such consistent items are not present we often fill in default values in memory (Brewer and Treyns 1981). This is of course not wholly wrong but misses some other important aspects of memory.

The early cognitive approach can be criticized for (1) cutting the person off from the world, (2) turning the mind into a series of storage compartments, and (3) neglecting questions about the origin and development of schema (Wagoner 2013). In his later work *Cognition and Reality*, Neisser (1976) himself introduced a more ecological approach to solve these problems, having been persuaded by J.J. Gibson of the inadequacies of the earlier formulation. Schema then became a way of picking up “invariances” in the environment for both perceiving and remembering. While first developed by Gibson (1966) to show that perception involves picking out invariant information within ones optical flow, Neisser combined the notion with schema to show how memory is organized into “repisodes,” which pick out invariant information found across repeated “episodes.” In his famous study of John Deans’s memory for conversations with Nixon during the Watergate scandal, Neisser (1982) showed that while Dean’s description of details for particular episodes was often in error, when compared to the recordings later uncovered, the testimony was faithful to shared characteristics of multiple episodes or a “repisode” of the conversations.

In this account, schema becomes a background condition for the ongoing *attunement* to the environment, rather than a static structure with nodes for filling in discrete values like a computer program might do. Bransford et al. (1977) used the metaphor of “setting the stage” to understand the

more dynamic conception of schema: “a major role of past experience is to provide ‘boundary constraints’ that *set the stage* for articulating the uniqueness as well as sameness of information” (p. 434, emphasis in original). For example, familiarity with driving a pickup will set the stage for experiencing the smoothness of a car’s ride. Thus, the most basic level of schema is a kind of body memory that allows us seamlessly act in a world that has both characteristics that persist and change. Bartlett himself became interested and began investigating the notion of *skilled performance* after having developed the schema concept. According to him, skill is marked by “complex, coordinated and accurately timed activities. The stimuli in response to which activities are set up are neither simple nor do they usually fall into a fixed succession. They have the character of a field, or a pattern, which become highly organized” (Bartlett 1941, p. 718). In contrast to fixed habits, the notion of skill is linked to a flexible opening of possibilities. This is aptly shown in Glaveanu’s (2012) study of creativity as mastery in the context of artistic Easter Egg decoration: one must develop basic habits of action in order to open up the possibility of high-level innovation and improvisation. Parallel mechanisms of improvisation can be seen at the level of memory skill in, for example, waiters and professional mnemonists (Ericsson and Polson 1988).

Imagination and Memory

Imagination and memory tend to be thought of as belonging to opposite ends of the conceptual spectrum in everyday language and psychology today: one dealing with the free play of mind and the other storage of sensory impressions. However, this was not always the case, as the shared root of invention and inventory mentioned above reveals (Glaveanu and Wagoner 2016). According to the ancient art of memory (Yates 1966), for example, mastering memory required imagination and was necessary for innovation. In its earliest formulation to the art of memory required that one create images of the things one wanted to

remembered and situate them within a familiar place in one’s imagination, to create a spatially organized system of memory. The images should be symbolic and bizarre in order to maximumly evoke memory. When a statesman wanted to deliver a speech they walked through the familiar place in their mind and read off the images representing the themes they wanted to cover. Thus, memory here was not focused on remembering isolated facts or incidents, as we tend to think of today, but rather as a system of organized ideas that could be recombined to generate novelities and was adaptable to the audience and situation. This is why the greatest genius of early medieval times, Saint Augustine, was at that time praised for his “memory” first and foremost, whereas we today would focus on the “creativity” of genius (Carruthers 2008). This says more about our shifting values and conceptualizations than a change in the psychology of invention.

Memory and imagination only went their separate ways during the enlightenment, where traditional truths were to be scrutinized by reason and method. The status of memory was already lowered by Descartes, who saw it as bound up with the bias and contingencies of the body. According to him, only a rigorous scientific method could guarantee truth. Similarly, in the empiricist camp Hume relegated memory to a faded form of perception, a copy of sensation in the form of a mental image. Imagination was then the faculty that mixes up these images to create fanciful things and distortions of reality, like imaginary beings constructed by putting together different animal parts. Such a view is in many ways present in much of the 20th experimental psychology of memory, as can be clearly seen in Gauld and Stephenson’s (1967) study discussed above. Memory under this conception became either a rather limited or suspect mental faculty.

Its suspect status has been a major focus within the domain of eyewitness testimony, especially as pioneered by Loftus and colleagues’ work on the “misinformation effect” (for a review see Loftus 2005). In these studies, participants are shown a film of a fast-moving event (such as a car accident) and then asked a series of questions about it, some of which suggest things that were not in

the film (such as “broken glass” or a “barn”). Later participants are more likely to remember these suggested but not originally present items when recalling the event. The assumption is that social influences or suggestions contaminate individual memory. This notion of suggestion itself comes from the late nineteenth century, where it was shown that hypnosis could implant memories through this technique (Motzkau 2009). The problem is that from a developmental perspective human memory seems to rely on a social and cultural framework, in which either someone else makes suggestions to us or we learn to make them to ourselves (i.e., autosuggestion). As Halbwachs (1925/1992) put it: “It is in society that people normally acquire their memories. It is also in society that they recall, recognize, and localize their memories” (p. 38).

From a Bartlettian constructive perspective, we could argue that essentially all high-level memory involves suggestion, either by others or by oneself. Having expectations about what normally takes place already shapes perception and recall of things (see section on “[The Concept of Schema](#)” above). Fully developed human memory effectively involves internalizing and habituating narratives of everyday events, like visiting a restaurant. As described above, Bartlett (1932) had in this way already brought imagination and memory together, arguing that “remembering is an imaginative reconstruction.” More recent work in philosophy and neuroscience has argued that both are forms of “mental time travel” (Perrin and Michaelian 2017) that allow us to break out of the here-and-now situation, so as to return to it with other perspectives, thus enlarging the realm of possibilities for action (see also Zittoun and Gillespie 2018). Even from a neurological level, the two cannot be clearly distinguished: Schachter et al. (2007) have demonstrated that the same regions of the brain are active in remembering one’s last birthday and imagining one’s next birthday. According to them, both are functional in prospectively anticipating the future and thereby facilitating action in the present. They also open up a space for bringing together experiences from different contexts, which is the primary characteristic of analogical thinking.

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Constructivism

Eduardo Martí

Facultat de Psicologia, Universitat de Barcelona, Barcelona, Spain

Abstract

Constructivism, when applied to the theory of knowledge, it is a theoretical perspective, postulating that knowledge is the result of a constructive process of the subject. Piaget is the clearest reference when dealing with constructivism. In this section the main ideas of Piaget's constructivism are analyzed in the domain of epistemology and psychology. Piaget's research on the creation of new possibilities is also mentioned. Finally, Piaget's constructivism is contrasted with Vygotskian co-constructivism.

Keywords

Cognition · Constructivism · Development · Epistemology · Piaget · Psychology

The polysemy of the term “constructivism” requires clarification. When applied to art, “constructivism” refers to an artistic style initiated in Russia at the beginning of the twentieth century. When applied to the theory of knowledge, it is a theoretical perspective, postulating that knowledge is the result of a constructive process of the subject. This section will expand on the second meaning. The constructivist perspective can be applied to many domains of knowledge: mathematics, psychotherapy, sociology, biology, theology, epistemology, psychology, and pedagogy. When applied to sociology and politics, the term used is usually “constructionism” (see section “Constructionism”). In this section, however, the case of psychology will be addressed and, within psychology, the work of Piaget will be the focus (see section “Piaget”).

The choice of Piaget is not at random. In psychology, Piaget is the clearest reference when dealing with the topic of constructivism. The importance of Piaget may be surprising if we consider that the term “constructivism” appears only late in his work (Piaget 1980). However, his assertion that knowledge is the result of a slow process of construction is a constant throughout Piaget's work. For example, one of his first major works is entitled, *The Construction of Reality in the Child* (Piaget 1954/1937). The idea that knowledge is the result of construction is, therefore, a central idea of Piaget's theoretical perspective. He posed this question within the domain of epistemology.

Piagetian Constructivism in Epistemology

Piaget's constructivism is inseparable from its epistemological positioning. This positioning gives meaning to and bases his work in psychology. As with any statement related to the knowledge process, two entities are required: a subject

(the person who knows) and an object (the external reality, or object of knowledge). Piaget’s epistemological approach starts from his analysis of the possible relationships between both of these entities. He distinguishes three possibilities: the primacy of the object, the primacy of the subject, and the impossibility of dissociating them (known as “indissociation”). Piaget then adds a second dimension of analysis, which is related to the origin and formation of knowledge. According to this dimension, there are solutions that postulate the development of knowledge (or as Piaget calls it, “genesis”), while other solutions postulate that there is no process of development. By combining these two dimensions, six possible answers appear to the question of the nature and origin of knowledge (see Table 1).

As can be seen in this table, Piaget chooses the term “relativism” to define his epistemological perspective. On other occasions, and before he consolidated the term constructivism, Piaget also used the term “interactionism.” Both terms (relativism and interactionism) point to two of the fundamental characteristics of Piagetian constructivism: 1) knowledge is the result of the interaction between the subject and object (hence the term “interactionism”); and 2) in this process of interaction, the subject and object are both modified reciprocally (hence the term “relativism”). In fact, knowledge is always related to a subject’s capacity for assimilation (which changes throughout his/her development); at the same time, this changes the subject’s capacities, causing changes in how he/she understands the object. Piaget called this constructivist perspective “genetic epistemology.”

A clear example of construction, as conceived by genetic epistemology, is that related to the concept of the “object.” Piaget accepts that objects

are part of a reality that pre-exists any relationship that a child has with it. From the perspective of the child, however, the objects have to be constructed. This construction process is slow and extends throughout the first year and a half of life. In the early stages, objects are assimilated into action schemes (suck, grab, pull, etc.) and only exist as a function of these actions. Progressively, thanks to the coordination of these schemes, objects acquire a reality independently of the actions of the child. That is to say, they reach permanence. From this moment (at around 18 months), the child is able to understand that objects exist, even if he/she does not see or touch them. In this long process of construction, from the perspective of the child, objects change as their action schemes change. The final point is reached when permanence is achieved.

Defining constructivism in this way allowed Piaget to define himself in front of the two dominant positions in the epistemological debate: the nativist perspective and the empiricist perspective. In the former, the subject is given a clear role, but the difference with constructivism is that the nativist thesis purports that knowledge is already constituted from the beginning, at birth. There is no construction process. If we take the previous example of the object concept then, following the nativist thesis, the object already exists from the beginning and the baby knows that it constitutes an entity of its own from his/her first weeks of life. Against the latter empiricist thesis, Piagetian constructivism insists that, although objects exist independently of the subject, the subject’s knowledge of them is not extracted directly through their perception of them, but that the subject needs an active and transforming participation (Piaget 1980; Piatelli-Palmerini 1979).

Constructivism, Table 1 Different solutions proposed by Piaget concerning the nature and origin of knowledge (adapted from Piaget 1950)

	Non-developmental solutions	Developmental solutions
Object’s primacy	Realism	Empiricism
Subject’s primacy	Apriorism	Pragmatism
Indissociation	Phenomenology	Relativism

Piagetian Constructivism in Psychology

Piaget always maintained that epistemology had to rely on empirical data, so that it did not become mere speculation. In this way, according to Piaget, epistemology can be differentiated from philosophy (1972/1965). Piaget found that the main empirical support for his epistemology was in developmental psychology. He called this “genetic psychology.”

The numerous studies that Piaget and his collaborators carried out to study cognitive development constitute an essential contribution in their defense of the constructivist thesis. In these studies, which related to fundamental categories of knowledge such as space, number, quantity, logic, and symbol, children of different ages were interviewed about a problem scenario to discover their way of thinking, and how this way of thinking transformed with age.

To appreciate the characteristics of Piaget's theory of constructivism, we will attend to two basic questions: what type of knowledge is being built (i.e., what is constructed) and what are the mechanisms of this construction (i.e., how it is constructed).

What Knowledge Is Constructed

For Piaget, knowledge arises from the interaction between a subject and reality and, therefore, what indicates the subject's progress in knowledge is progress in the actions that the subjects are able to perform to solve a particular problem. Piaget distinguishes three well-differentiated periods (called “stages”) when analyzing how knowledge construction occurs.

In the first stage of development, the interaction between a baby and various objects is realized by sensory-motor actions, such as to suck, grab, and push, and these actions generate knowledge. In fact, when these actions are repeated in different situations, they maintain a framework, a structure, which Piaget defines as an “action scheme.” The emphasis of constructivism is not placed on the specific knowledge that children draw from their actions, as applied in isolation, but in the

consequences that the action schemes have when they coordinate with each other and constitute broader conceptual frameworks (known as “joint structures”) (Piaget 1971/1968).

For instance, an interesting process in the development of babies occurs when two schemes of action are coordinated, with one scheme becoming a means to achieve a goal. This happens, for example, when a baby moves a screen (first action scheme) to catch an object that is behind it (second action scheme). When this coordination of schemes progresses, there comes a moment, according to Piaget, in which they constitute structures that allow a new and deeper knowledge of reality. This is known as “normative knowledge,” a knowledge that is imposed in a necessary way to the subject. Another example of this kind of knowledge occurs when babies discover that, if an object moves from place A to place B, there is a movement from B to A that cancels the first movement. Or when babies discover that, even if an object has been hidden behind a screen, if they move the screen they will find it. These behaviors indicate that the concept of object has been constructed and it has been made possible, thanks to the coordination of action schemes. During this first stage (sensory-motor stage), the knowledge that is being constructed arises from a sensory and motor interaction of the baby with the environment. It is practical knowledge.

After a certain point (at the second year of age), a new constructive process begins. In this case, however, the child has to coordinate mental actions (called operations), rather than effective actions as in the preceding stage. Thanks to the function of symbols, the child can perform different actions mentally (instead of having to execute them practically). Some examples of these operations are to collect and separate objects, or to sort or classify them. The transition from action to operation means that the cognitive advances made by the child in the sensorimotor stage will have to be re-constructed, but now in the mental plane, in the plane of operations. This is a slow constructive progress that culminates toward 7 years of age, when children are able to coordinate mental operations with each other. By being

able to coordinate operations completely, the child's thought becomes more coherent, less egocentric, and reaches a greater degree of objectivity. Piaget calls this second stage the stage of concrete operations. A consequence of this achievement is constructing the concept of conservation: the knowledge that a dimension (e.g., mass, number, length, weight, volume) remains the same, although it may change its appearance. This knowledge, as occurred with the concept of object in the previous stage, has a normative nature. For example, in the case of the conservation of liquid quantity, the child deduces that there must necessarily be the same amount of liquid, if it has only changed its appearance and nothing has been added to or removed from the container.

Cognitive development does not end with this second stage, however. For Piaget, there is a final and definitive progress when a coordinated set of formal operations is constructed. These operations apply to the relations between hypothetical propositions, independently of their content. In this stage, the subject can deduce necessary consequences by reasoning in a hypothetical way, without paying attention to its content. His/her reasoning can be based on the formal relations between propositions (e.g., tautology, contradiction, necessary condition, sufficient condition). This is what Piaget calls the stage of formal operations. It culminates approximately at 15 years of age and consists, once again, of a cognitive reconstruction of what was achieved in the previous stage, but on a new level (that of hypothetical reasoning based on the logical relationships between propositions) (Piaget 1969/1966).

From the perspective of Piagetian constructivism, cognitive development can be described as a spiral, as a series of reconstructions on different levels: the level of actions, the level of concrete operations, and the level of formal operations. Each reconstruction consists of a stage of development that is qualitatively different from and integrates with the previous one. In each stage, new relationships – between actions, between concrete operations, and between formal operations – are possible. These new relationships allow for new ways of knowing the world. A

knowledge that is, increasingly, broader and more rigorous.

How Knowledge Is Constructed

According to Piagetian constructivism, there are clear discontinuities in the nature of the knowledge that appears alongside development. These discontinuities correspond to the different stages described above. From a functional standpoint, if we look at how the exchanges between subject and object are made, Piaget asserts that, throughout all development, interaction is guided by the same processes: “assimilation” and “accommodation.” Assimilation is defined as the incorporation of an object into preexisting cognitive structures. For example, incorporation means that an object takes on a meaning that it is interpreted. At the same time, however, there is a reciprocal process, called accommodation: the preexisting structures have to be modified according to the characteristics of each new object that is assimilated. Alongside development, therefore, there is a functional continuity to the extent that both processes always guide the exchanges between subject and object.

How can we explain that these processes are responsible for the progress that occurs from the sensory-motor stage to the stage of formal operations? Piaget proposes that the essential motor of this cognitive construction is a process of “equilibration” (Piaget 1969/1966). Equilibration is defined as the set of self-regulations that occur in the interaction between the subject and object (1985/1975). This granting of a fundamental role to equilibration does not mean that other factors, often proposed to explain the construction of knowledge, are unimportant. Piaget designates three factors: 1) organic growth and maturation, 2) experience related to actions (and operations) exercised on the physical world, and 3) social interactions and cultural transmissions. Piaget also argues that these three factors, although necessary, are not sufficient to explain the progress made in knowledge alongside development. The factor that drives these developments, the orchestra leader so to speak, is precisely this process of equilibration.

The self-regulations that occur in equilibration consist of actions that the subject performs in response to disequilibria that appear in his/her exchanges with the environment. The origin of these disequilibria can be diverse and of different complexity. They can appear before the impossibility that a baby faces in assimilating a new object to a current scheme of action, which requires them to regulate the action to avoid this disturbance. Disequilibria also appear in cases in which a problem has to be solved, as in the case of conservation tests in which the child must mentally compensate for the changes introduced by the experimenter in order to find the answer to the question posed. They also appear in many other cases in which the subject tries to solve a new problem.

These self-regulating processes – always in search of a more stable, more balanced exchange between subject and object – are responsible for building knowledge in a certain direction (such as obtaining knowledge that establishes a more stable equilibrium, that is more adapted to reality). In fact, within each stage of development, knowledge progresses in the direction of establishing more balanced exchanges between the subject and the environment. Conversely, these three stages can be viewed in succession as a progress toward forms of relationship with the environment that are increasingly broader and more flexible and, therefore, more stable and balanced.

The Creation of Novelties as New Possibilities

One of the central questions of any constructivist perspective is to account for the appearance of new knowledge, or “novelties”, so as to explain how novelties are produced throughout the construction process. Piaget’s answer is to defend that self-regulatory processes, which make new knowledge possible, correspond to the three stages of development described above. This knowledge, according to Piaget, is not previously pre-formed in the subject nor is it extracted from the objects directly. The activity of the subject is necessary to elaborate it.

One of the ways that Piaget proposes to address the issue of the production of novelties is to analyze, throughout the development process, how new possibilities are generated (Piaget 1987/1981) (see section ► [“Possible in Psychology”](#)). According to Piaget, updating any action or idea implies that, previously, this action or idea was considered to be possible. Hence, it is important to study how new possibilities are generated. At the same time, the generation of one possibility usually implies the generation of other possibilities.

According to Piaget, how the subject generates new possibilities varies according to age. Through a wide sample of studies, Piaget showed that, from the perspective of the child, generating new possibilities undergoes four stages. All the studies posed situations to children of different ages in which they had to imagine different possibilities (the different paths that a car can take between two places, how many different ways a square can be cut from cardboard, different ways to raise the water level of a container by introducing various objects, etc.). In the first stage, the child generates possibilities one after another, based on certain analogies between them. In the second stage, the child can anticipate several related possibilities (Piaget calls them “co-possibilities”) before updating them. In the third stage, the child manages to understand that the co-possibilities he/she updates are only some cases, among many other conceivable co-possibilities. Finally, in the fourth stage, the child realizes that the possibilities are unlimited. The results of these studies showed that the advances in a child’s generation of possibilities were closely related to the different stages of development.

Co-constructivism in Psychology

Piaget’s theory of constructivism is not the only constructivist perspective in psychology. Under his influence, throughout the 1980s and 1990s, the term “constructivist” was extended to other psychological theories. It was applied to any perspective postulating that knowledge is not

innate and does not come directly from the environment, but is made thanks to the activity of the subject. What then happens is that there are many ways to define what is meant by the subject's "activity." In psychology, this leads to very different theories, which can all be considered "constructivist" in a broad sense (Martí 1996). Among these, the theory that is based on the sociocultural psychology of Vygotsky and his followers (see section "Vygotsky") has been the most influential. This is called "co-constructivism" (Valsiner 1996).

The constructivism of Piaget, although it does not dismiss social factors as being necessary elements for the construction of knowledge, places emphasis on the interactions between the subject and the physical environment. From this perspective, the role played by other people is secondary. Co-constructivism assumes that the elaboration of knowledge cannot be explained by considering only the interactions between the subject and the physical world. It is also necessary to consider the fundamental role played by social interactions and culture in a construction (becoming, therefore, "co-construction," in the sense that it is a construction made jointly with other people).

The implications of this thesis, however, are different. The first is to contend that any interaction occurring between the subject and the environment (both social and physical) is located within a framework of pre-constructions, which have been generated throughout history, and which constitute a cultural legacy (Bronckhart 2012). These pre-constructions consist of the collective activities and accumulated knowledge that govern the exchanges between people of a specific social group. All knowledge construction, therefore, has its origin in these cultural pre-constructions.

The second implication is to argue that an important part of cultural legacy is semiotic in nature. Therefore, the construction of knowledge is a semiotically mediated activity and, in this mediation, language acquires a fundamental importance. Vygotsky attached great importance to the fact that, when psychological processes are semiotically mediated, they are profoundly

transformed. In addition, he argued that signs (e.g., language, which is a particular and very powerful case in the system of signs) have a social origin.

The third implication is the idea that interpersonal relationships are constitutive elements of any knowledge construction, to the extent that knowledge is constructed under the guidance of other people. Vygotsky introduced the concept of the "zone of proximal development" (see section ► ["Zone of Proximal Development"](#)) to demonstrate the importance of the support and help of other people in any development process. Hence, for co-construction to occur, development and education are two interdependent processes.

Conclusion

Constructivism constitutes an epistemological position that differs from nativism and empiricism. From this position, it can be asserted that knowledge is the result of a slow process of construction and that the subject has a clear role in this construction. These are the general features of any theory called "constructivist." These general postulates can also give rise to different psychological, biological, mathematical, or educational theories.

Piaget was one of the authors who defended this epistemological perspective most clearly. He proposed a set of postulates based on empirical data to show how subjects build their knowledge throughout their development. His theory of developmental psychology was founded in epistemological arguments. He defended the importance of the interactions between the subject and objects from which different knowledge emerged throughout the subject's development. He proposed that the construction of this knowledge could be described in terms of stages; each stage corresponded to certain cognitive achievements of different complexity. Finally, he explained that knowledge can be constructed thanks to self-regulating mechanisms. Considering that one of the central problems of any constructivist perspective is to explain the appearance of novelties (new knowledge) and that novelties, before being

updated, have to be possibilities, Piaget proposed a series of studies on how possibilities are generated alongside development.

The way in which Piaget specifies how knowledge is constructed is not the only psychological solution to this question. An interesting alternative is the one that defends the sociocultural theory of Vygotsky. Although in his writings Vygotsky did not explicitly use the term “constructivist” to describe his theory, his proposal stands out from nativism and empiricism. Unlike Piaget, however, Vygotsky grants a crucial role to social interactions and culture in the construction of knowledge.

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Counterfactual Thinking

Felipe De Brigard

Duke University, Durham, NC, USA

Keywords

Counterfactual thinking · Contrary-to-fact · Counterfactual potency · Functional theory · Upward-downward counterfactual thoughts

Definition

The term “counterfactual” was coined by philosopher Nelson Goodman (1947) to capture Roderick Chisholm’s more convoluted locution “contrary-to-fact” (Chisholm 1946). “Counterfactual” was initially used in reference to conditional statements with false antecedents such as “If kangaroos had no tails, they would topple over” (Lewis 1973). Since, in reality, Kangaroos do have tails, this counterfactual conditional expresses a relation between a false antecedent and its consequent. The concept behind the term, however, has a longer history. For instance, Newton, Leibniz, and Laplace famously discussed various philosophical issues involving ways in which the world could have been, and many argue that Hume employed counterfactual considerations to define *cause*. Nevertheless, for most of the twentieth century, research on the meaning of counterfactual statements was very much confined to philosophy, and to areas such as logic, semantics, metaphysics, and epistemology. There was very little, if any, psychological research on the nature of the thoughts expressed by counterfactual statements.

In October 1982, in his wonderful yet short-lived Scientific American column *Metamagical Themes*, cognitive scientist Douglas Hofstadter playfully conjectured that the crux of creativity was to be found in the fact that our minds tend to slip, nondeliberately yet nonaccidentally, into “variations of a theme” of which counterfactual thoughts, or “subjunctive hypothetical replays,” are of the essence. Three years later, he appended

a postscriptum to said column in which he referred to Kahneman and Tversky's (1982) seminal work on the simulation heuristic as spearheading research in the psychology of counterfactual thought. The following three decades saw an explosion of research in the psychology of counterfactual thinking, initially confined to the fields of social psychology and behavioral economics, but later on expanded so as to include developmental and cognitive psychology and, more recently, neuroscience. By necessity, then, this short entry is very selective, and structured around four specific questions: (1) When do people engage in counterfactual thinking? (2) Why do we generate counterfactual thoughts? (3) What do people think when they engage in counterfactual thinking? (4) How do we generate counterfactual thoughts?

When Do People Engage in Counterfactual Thinking?

Kahneman and Tversky's (1982) work on the simulation heuristic spearheaded experimental research on the psychology of counterfactual thinking. In this work, Kahneman and Tversky surveyed a handful of results from vignette-based studies and suggest that people tend to counterfactually mutate events that antecede a certain outcome according to three "directions": *Uphill* changes introduce nonactual unlikely events, *downhill* changes delete actual surprising or unexpected events, and *horizontal* changes simply swap two variables that are perceived as neither more nor less likely. They chose to use these terms metaphorically, as they convey the sense that the same distance traveled uphill takes much more effort than when it is horizontal, and this in turn takes more effort than when it is downhill, which helps to explain the second observation of their influential paper: that people are much more likely to engage in downhill relative to both uphill or horizontal counterfactual thoughts. Thus, according to Kahneman and Tversky (1982: 208), the simulation heuristic, which they claim we employ for counterfactual thinking, is biased in favor of downhill changes. But why?

A preliminary answer as to that question had to wait four more years, until the publication of Kahneman and Miller's (1986) influential "norm theory." On this account, abnormal events or experiences increase the salience of counterfactuals that are congruent with the normal state of affairs. Consider a bicyclist who takes an abnormal route home from work and is hit by a car. Intuitively, when reflecting back on the event, the biker may likely think "If only I had taken my normal route home, I wouldn't have been hit." By contrast, if the biker had taken their usual route, it is less likely that they would have thought, counterfactually, "If only I had taken a different route, I wouldn't have been hit." Thus, when extraordinary or abnormal events occur, we are more likely to mentally mutate them toward the norm, much more so than we are likely to mentally mutate ordinary or normal events away from the norm.

This "exceptionality effect" in counterfactual thinking was shortly followed by the discovery of other "fault lines" in our imagination (Hofstadter 1985). For instance, people tend to counterfactually think more about controllable relative to uncontrollable events (Giroto et al. 1991). Consider these two situations. In one, a person – call them Oan – leaves a bit earlier from their office and, on the way home, decides to stop at a bar to get a drink. Unbeknown to him, his spouse is having a heart attack. Had Oan arrived on time, he would have been able to save her. The second situation is just the same, except that Oan left early but was caught in traffic. In neither case, Oan was able to make it on time to save his spouse, but when confronting these two situations, people overwhelmingly think that Oan would be much more likely to engage in counterfactual thinking and imagine "what if I hadn't stopped at the bar," relative to the situation in which the reason for his delay was not under his control. This "controllability effect" is also related to an "action effect," famously described by Kahneman and Tversky (1982). Suppose Ema holds shares in company A, but decides to switch to company B. As a result, she loses \$1,000. By contrast, Ava holds shares in company B, and considers changing to company A but decides

against. She also loses \$1,000. Despite the fact that both lost money, people overwhelmingly think that Ema – who acted – would feel much worse than Ava – who did not – and would be much more likely to counterfactually think “If only I hadn’t change companies, I wouldn’t have lost \$1,000.”

Another well-documented effect is “temporal order.” Imagine a coin-toss game in which two people win \$1,000 if they both toss a coin and both land in the same face. Person A goes first, and she tosses heads. Person B goes next, and she tosses tails. When asked how things would have been better for them, most people counterfactually imagine the alternative in which person B tosses heads, rather than person A tossing tails, even though both alternatives would have yield a win (Miller and Gunasegaram 1990). The tendency to modify the most recent event also occurs with longer sequences (Segura et al. 2002), and even when the events are historical and take place over much longer time periods (Tetlock and Belkin 1996).

When first proposed, norm theory suggested that effects such as temporal order and exceptionality in counterfactual thinking biased judgment and decision-making. As such, these biases or tendencies were seen as an impediment to sound judgment. However, as more and more of these “biases” started to emerge, not only it became suspicious that they all reflected irrational judgments, but also they became harder to account in terms of norms alone. To offer an alternative explanation, Petrocelli et al. (2011) put forth a theory known as *counterfactual potency*. According to their view, the degree and strength of influence a counterfactual thought would exert – what they term “counterfactual potency” or CP – is proportional to the multiplicative product of the perceived likelihood of the antecedent of the counterfactual – which they term “if likelihood” or IL – and the perceived conditional likelihood of the alternative outcome, given the antecedent – the “then likelihood” or TL. Briefly, then, $CP = IL \times TL$. As such, when a person judges the likelihood of an antecedent to be very high, and the likelihood of the consequent conditional on the antecedent to be high as well, then

the counterfactual would be more likely to be entertained than when either IL or TL are very low. To what extent the theory can manage to explain all known – and yet-to-be found – effects on counterfactual thinking remains to be seen, as it is not always terribly obvious how exactly to quantify both if and then likelihoods in all situations.

Why Do We Generate Counterfactual Thoughts?

To better understand why people engage in counterfactual thinking, Roeser and Olson (1995) offered the first formulation of their *functional theory of counterfactual thinking*. According to them, counterfactual thinking serves two psychological functions, and each function is related to a specific structure of a counterfactual thought. Upward counterfactual thoughts, which consist in imagining how a past event could have been better, are associated with a preparative function. More precisely, the theory suggests that we engage in upward counterfactual thinking when we fail to obtain a positive outcome or desired goal, and thus imagining achieving the failed outcome or goal may help to improve our chances of doing so in relevantly similar future situations. Thus, the soccer player that failed the penalty kick, by aiming a bit too far to the right, may imagine what would have happened had she aimed leftward so that the next time she faces another penalty kick, her chances of making the goal would improve. Moreover, upward counterfactuals typically elicit regret, an emotion that is thought to help motivate improvements in future behavior.

By contrast, downward counterfactual thoughts, which consist in imagining how a past event could have been worse, were thought to serve an affective function. Specifically, by mentally simulating a worse outcome than what it actually occurred, people may feel better about what actually happened. A person who survives a car accident, for example, may imagine how it could have been much worse – e.g., they may imagine having been seriously injured – in order

to feel better about the fact that their car is now totaled. As a result, downward counterfactual thoughts are typically associated with feelings of relief. Indeed, the affective consequences of both upward (i.e., regret) and downward (i.e., relief) counterfactual thoughts were interpreted according to the emotional amplification hypothesis (Kahneman and Miller 1986), which was proposed as part of the norm theory. According to this hypothesis, upward counterfactual thoughts tend to heighten negative emotions, whereas downward counterfactual thoughts tend instead to heighten positive ones.

One of the most serious challenges to the functional theory of counterfactual thinking came from Markman and McMullen (2003, 2005) in their Reflection and Evaluation Model (REM). According to the REM, when people engage in counterfactual thinking, they may do so via two different modes of mental simulation. One the one hand, when mentally simulating an alternative possibility, a person may focus on the content of the simulated event, and thus their affect would be biased toward the feeling that would have been elicited had the imagined event been real. This process of *assimilation* leads people to think that the imagined content is part of their current self and thus to simply *reflect* about it, without contrasting it with reality. The soccer player that failed the penalty kick and engaged in upward counterfactual thinking may decide to just focus on the simulated content (i.e., the imagined goal), without regard to what actually occurred (i.e., the missed goal), and simply relish on the possibility of having scored. This mental experience, rather than eliciting regret, may elicit joy instead. Conversely, when the car accident survivor simply focuses on the simulated content, they may feel sick to their stomach by the sheer contemplation of being seriously injured, without regard to the fact that they actually are not.

The reflective mode of engaging in counterfactual thinking contrasts with the *evaluative* mode, which stems from a *contrastive* process, in which a person focuses not on the simulated content but on the contrast between the imagined situation and the situation they are in when imagining. By *excluding* (as opposed to assimilating) themselves

from the imagined counterfactual situation, people shift their affect away from the feeling they would have felt had the simulated content occurred, eliciting the opposite valence. For example, when the soccer player evaluates the unobtained outcome (i.e., a goal) against the current state (i.e., having missed), regret ensues, just as relief is felt by the driver who contrasts the possible outcome (i.e., being injured) against the actual, more desirable outcome (i.e., having survived the crash without injury). Thus, according to the REM, the emotional amplification hypothesis only explores some affective consequences of imagining alternative ways in which past events could have occurred, as these can vary depending on the psychological mode one adopts when engaging in counterfactual thinking.

Given the findings and observations from the REM, the affective and motivational consequences of counterfactual thinking were revised in an updated version of the functional theory (Epstude and Roese 2008; Roese and Epstude 2017). Now, according to the revised version, counterfactual thinking serves mainly a preparative function whose object is to improve or modify future behavior, while the affective consequences of such simulations are seen as merely secondary. However, the updated functional theory suggests two “pathways” through which counterfactual thinking contributes to behavior modification. The first is a content-specific pathway, through which the information represented in the counterfactual thought directly transfers to a possible future situation. For instance, the soccer player that imagines having scored, by kicking the ball slightly leftward, may later on recall that very content and correct her movements accordingly. By contrast, the second pathway is content-neutral, whereby counterfactual thinking impacts future behavior independently of the content represented in the mental simulation but rather via emotion, affect, or motivation.

More recently, it has been suggested that in addition to a forward-looking function, counterfactual thinking may also serve a mnemonic role. Based upon findings from memory research suggesting that when autobiographical memories are reactivated, they become labile and prone to

modification, engaging in counterfactual thinking may help to modify some of the mnemonic contents of reactivated memories (De Brigard et al. 2019). In a recent study, for instance, Parikh et al. (2021) showed that when anxious individuals reactivate negative autobiographical memories and imagine worse ways in which the remembered events could have occurred instead, their feelings of regret later on are reduced relative to simply remembering the event without generating a downward counterfactual. However, the precise nature of this alleged mnemonic role for counterfactual thinking is still an open question.

What Do People Think When They Engage in Counterfactual Thinking?

In addition to understanding the circumstances in which people tend to engage in counterfactual thinking, as well as their functional roles in our mental life, researchers have also tried to answer the tricky question of what exactly comes to mind when we think counterfactually. One of the most influential approaches to answering this question was initially proposed by Byrne (1997) building upon the conceptual machinery of *mental models* (Johnson-Laird 1986). According to her view, when people think counterfactually, they entertain two mental representations: one with the imagined alternative and one with the actual, known fact. Thus, when someone thinks “If kangaroos had no tails, they would topple over,” they are prompted to represent the conjunctive fact “Kangaroos have tails and they don’t topple over” as well as the conjunctive counterfactual possibility “Kangaroos have no tails and they topple over.” Typically, people entertain as few possibilities as needed to make sense of a counterfactual. Thus, initially, people likely do not represent the conjunctive possibility “Kangaroos have tails and they topple over” or one in which kangaroos have no tails and manage to not topple over, perhaps by some other means. Of course, given more time, people may be able to represent all sorts of counterfactual possibilities. But the intuitiveness of the initial dual-possibilities, the fact that these two juxtaposing representations are the

ones that first come to mind, suggests – according to Byrne – that such is the nature of the mental model with which we immediately interpret a counterfactual statement (Byrne 2002, 2016).

A more recent proposal, put forth by Phillips and colleagues (e.g., Phillips and Cushman 2017; Phillips et al. 2019), seeks to answer the same question but from a different perspective. Specifically, their interest is to understand how people select a subset of possibilities, among all of the perhaps infinitely many possibilities that there are, when considering counterfactual alternatives to reality. To use a variation on a theme from Hofstadter (1985), consider the situation in which you walk into a pizza parlor and you are handed a slice of pizza. As you get it closer to your mouth it slips off your hand and lands on the floor. Think about the barrage of possibilities that could have come to mind when thinking about what might have prevented the pizza slice from falling so that you could still enjoy it. Most likely you may think “if only I have grabbed better” or “if only my reflexes were faster so I could have caught it mid-air.” But there are lots of other possibilities you could have considered: “if only gravity had stopped for a second,” “if only it had happen to the person behind me in line rather than me,” or “if only it was socially acceptable to eat things off the ground.” All of those are possibilities that, had they been actualized, would have allowed you to still eat your pizza slice. Nevertheless, most likely they would not have come to mind. But why?

Phillips suggestion is that when we sample possibilities, our default representation is constrained by what we find both likely and valuable. When applied to counterfactual possibilities, their proposal implies that our initial or default considered possibilities are the result of a three-step process. First, there is an initial partitioning of possibilities that is likely task-dependent. The next step consists in an adaptive sampling that depends on two factors: the probability of the possibility and its adaptive value. This adaptive sampling process, which is not task-dependent but rather uniform across tasks, leaves a smaller subset of possibilities to be further considered and evaluated. Thus, in a third and final step, people

reason and decide among this much smaller set of possibilities (Phillips et al. 2019). In a beautiful demonstration of the power of their model, Phillips and Cushman (2017) presented participants with a situation in which a student, Mary, forgot her homework. Then they were presented with a number of different possibilities, with different modal terms, as to what she might do, and they were asked to judge whether or not it applies. For instance, they may have read “Mary could forge an excuse note,” “Mary ought to forge an excuse note,” “Mary might forge an excuse note,” etc. Critically, some of the participants had to answer very quickly, while others had more time. They found that, when participants had more time, their responses varied widely. By contrast, when they were under time constraints, their pattern of responses was very uniform, and highly constricted by morality. More precisely, when considering the possibilities available to Mary, most people’s default intuition is constrained by what Mary ought to do, suggesting that the sampling of possibilities is initially constrained by moral value.

Phillips’ model is a phenomenal development toward our understanding of the computational underpinnings of counterfactual and hypothetical reasoning in general. Nevertheless, it still leaves a number of intriguing questions unanswered. What determines, for instance, the initial partitioning of possibilities? While they may be task-dependent, it is worth wondering what features of the task influence the initial partition of possibilities, or whether there is some other factor, prior to the task itself, that may influence how we initially partition the set of possibilities we subsequently sample. The answer, intriguingly, may come from a different area of research: memory.

How Do We Generate Counterfactual Thoughts?

One of the most remarkable findings in the cognitive neuroscience of memory, in the last few decades, is that our capacity to imagine possible personal future events is supported by some of the same neural structures required to remember our

personal past – a set of brain regions commonly referred to as the “brain’s default network.” To account for this commonality, Schacter and Addis (2007) postulated the *constructive episodic simulation hypothesis* according to which both episodic memory and episodic future thinking involve the recombination of past episodic details into mental simulations depicting either actual past or possible future events. As such, the common engagement of these mutual operations explains the fact that both require similar neural substrates. Interestingly, soon after it was found that some of these core neural structures have been also implicated in our capacity to imagine alternative ways to past personal events that could have occurred but did not – a variety of counterfactual thoughts that have been dubbed *episodic counterfactual thinking* (De Brigard et al. 2013; Schacter et al. 2015). As such, De Brigard et al. (2013) extended the constructive episodic simulation hypothesis to cover not only episodic future but also episodic counterfactual thoughts.

Further studies showed that other varieties of counterfactual thoughts did not rely on the same core regions involved in episodic memory and future thinking. For instance, counterfactual thoughts that involved objects, as opposed to people, were less likely to engage core regions of the brain’s default network (De Brigard et al. 2015). In another study, Parikh et al. (2018) asked participants to think counterfactually about past personal episodic memories or to think counterfactually about semantic facts (i.e., “imagine that Iowa City was the capital of the US”) while undergoing fMRI. Their findings show that while episodic counterfactual thoughts clearly recruited core regions of the brain’s default network, semantic counterfactual thoughts engaged regions outside of it, primarily associated with semantic memory and linguistic processing. More recently, Khoudary and colleagues (2022) conducted a neuroimaging study contrasting internal episodic counterfactual thoughts – in which the participant imagines that something they could have done would have brought a better outcome to a past personal negative event – against external episodic counterfactual thoughts, in which participants thought of alternative ways in which a change in

circumstances that was not up to them would have brought about a better outcome to a past negative event. They found that, while both kinds of counterfactual thoughts tended to recruit regions of the brain's default network, some were differentially recruited as a function of whether the locus of action in the counterfactual thought was internal to the self or external to the circumstances surrounding the event.

Taken together, the results of these recent findings in the cognitive neuroscience of counterfactual thinking strongly suggest that not all counterfactual thoughts are created equal, and that depending on whether the counterfactual alternatives depend on episodic or semantic memory, people may likely engage different cognitive processes (De Brigard and Parikh 2019). Indeed, these findings dovetail with an intriguing study by Giroto et al. (2007) in which they document an actor-reader asymmetry in counterfactual thinking. Recall, from Section “[Why Do We Generate Counterfactual Thoughts?](#)”, the “controllability effect.” It says that, when presented with vignettes involving alternative possibilities to an action or decision, people are more likely mutate about what was under the protagonist control rather than uncontrollable aspects of the situation. However, what Giroto et al. (2007) show is that when the protagonist is not someone in a vignette but rather themselves, they do not mutate aspects of what they could have done but rather aspects of the situation that were not up to them. These findings suggest that, even when facing exactly the same choice, what we think counterfactually about others may not be the same as to what we think counterfactually about ourselves.

Summary

The science of counterfactual thinking is going through a very exciting moment, and findings keep piling up. As such, this brief entry only touched the surface of what is now a very large area of research. Findings from ethology and comparative psychology, for instance, are starting to shed light on which nonhuman animals can engage in counterfactual thinking and under

what conditions. Likewise, there is a large amount of research on the development of counterfactual thinking, the results of which are casting light on the question of when that ability emerges in children and how it develops through infancy and adolescence. Although fewer, there is also research on how counterfactual thinking changes in both pathological and nonpathological aging, as well as the impact of different brain illnesses on our capacity to think about alternative ways past events could have occurred. Finally, there is also an enormous amount of fascinating research connecting counterfactual thinking to other cognitive processes, such as moral cognition, decision-making, and causal reasoning, among others (for a recent review, see Byrne 2016).

Cross-References

- [“As If” Thinking](#)
- [Decision-Making](#)
- [Divergent Thinking](#)
- [Imagination](#)
- [Possibility Thinking](#)
- [Possible in Psychology](#)
- [Possible Worlds](#)
- [Thought Experiments](#)

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Crealectic Intelligence

Luis de Miranda
Uppsala University, Uppsala, Sweden

Abstract

The emerging crealectic frame posits that there are three complementary and effectual domains of intelligence, namely analytic, dialectic, and crealectic, being alternatively or complementarily used in human interactions with the world. The focus of crealectic intelligence is the relative possibilization and local realization of absolute possibility, the becoming real, biological, and social of creation. This multimodal externalization and asymptotic unification of a cosmological flux expresses itself via three realms of possibilization: physical (corresponding to

analytic intelligence), psychological (corresponding to dialectic intelligence), and philosophical (corresponding to crealectic intelligence). But the philosophical possible is not merely abstract; it originates a generative process of exteriorizations, interiorizations, dissolutions, and unifications transforming the possible into realities. The term “crealectics,” coined by philosopher and author Luis de Miranda (*Paridaiza*. Plon, Paris, 2008), is a compound of “Creal” (from “creative” and “Real”) and of two possible suffixes: “logos” (from the Greek word designating a universalized meaning) or “ektos” (from the Greek root meaning “toward the outside,” “outer,” or “external”). The ontological core of crealectics, the Creal, is the immanent process of creation understood as a ubiquitous stream of absolute possibility exteriorizing itself. For a crealectician, philosophy is not the mere logical analysis of truth conditions, but the self-questioning enterprise of thought regarding its own possibilizing and world-making power.

Keywords

Crealectics · Dialectics · Intelligence · Creal · Possible · Creation · Process philosophy

Introduction: Multifarious Intelligence

The crealectic frame posits that there are at least three complementary modes of intelligence, namely *analytic* (an objectifying discretization of the real in which machines may excel), *dialectic* (which deals with meaningful and often bipolar contrasts between entities or positions), and *crealectic* (which deals with potentials, actualizations, and unifications of absolute multiplicity). No healthy society may be possible without a holistic harmonization of these three performative aspects of thinking.

While the idea that there are several kinds of human intelligence (see ► “[Intelligence](#)”) became mainstream by the end of the twentieth century (Sternberg and Kaufman 2011), there is no general agreement on what these different kinds might be. The very etymology of the word

intelligence is ambivalent, between the two roots *inter-legere* and *inter-ligare*. Intelligence can be about *inter-legere*, to read between the lines, to distinguish, and to discriminate – “the world is an immense chaos of interactions, but in this immense chaos of interactions comes a human being who will know how to choose from this multiplicity” (Jousse 2016, p. 29). Yet, the root of intelligence can also be *inter-ligare*, to create links and connections: “Discoveries consist of bringing together ideas [...] that are susceptible to join but that had not been hitherto been joined” (ibid.). Whether intelligence consists in picking and distinguishing parts by a process of division and segmentation, for instance, via the analytic method in science; or in discovering wholes, syntheses, and unities by a process of association, for example, in dialectic thinking; or, third, and more actively, in generating actualizations of hidden potentialities (see ► “[Potential](#)”) – not to speak of the various historical, cultural, and disciplinary variations in defining intelligence around the globe – its polysemy of practices confirms the necessity of abandoning the view that intelligence is a universal form of manipulating symbols, one that could eventually be fully systematized in a series of protocols or algorithms. The Crealectic approach is particularly interested in the aspect of intelligence that deals with the philosophical possible and its actualizations.

The slow but steady development of the domain of “artificial intelligence” (AI) since the coining of the term in 1956 by John McCarthy et al. (O’Regan 2012) has not only added a new layer of complication to the understanding of what minds can do (Jacob 1997), but it has also in contradistinction induced the question of what “natural intelligence” might be (de Callatay 1992; Estep 2006). By natural here, we mean what a living human intelligence can access without the help of computers, leaving open for further debate the question of animal, plant, or alien intelligences. In order to define natural intelligence, one needs to provide a definition of what nature is, at least axiomatically. This is what the notion of “crealectic intelligence” does, by equating the essence of Nature with the process-philosophical concepts of “Creal,” “Creative Real” (de Miranda

2017, 2020a), “foundational process of creativity” (Whitehead 1929, p. 160), or “creative evolution” (Bergson 1911).

Definition and History

Crealectic intelligence is natural intelligence inasmuch as the essence of Nature – and therefore of Culture – is defined as a creative process of externalizations, interiorizations, dissolutions, and unifications grounded in absolute possibility. The term “crealectics,” originally coined by philosopher and author Luis de Miranda (2017), is a compound of “Creal” (from “creative” and “Real”) and of two possible suffixes: “logos” (from the Greek word designating a unifying meaning) and “ektos” (from the Greek root meaning “toward the outside,” “outer,” or “external”). The word Creal (French *Créel*) itself was coined by de Miranda in his French science-fiction novel *Paridaiza* (2008, English translation 2020), in which the characters are immersed in a totalitarian duplication of the Earth created through virtual reality and AI technologies (see ► “[Virtual Reality](#)”), an addictive simulation (see ► “[Virtual Reality](#)”) that maintains humanity in a state of sensual dependence and immaturity.

A group of rebels manages, however, to create a liberating virus that shall free the alienated users of Paridaiza, via a coded signifier which they initially call *Strait*. Magellan^x, the first insurgent avatar who benefits from the Strait treatment, has the vision of “a world he has spontaneously named the Creal.” (2020, p. 151). As per the published English translation of the novel (2020b):

“You’re going to think I’m on drugs. The first impression I had was of being in a different universe from Paridaiza, maybe even an opposite one. There was a kind of explosion, and I found myself in the corner of a sort of cloister, with a garden and a fountain.”

“Did it look like a place you’d seen before?” asks Clara^x.

“Nothing was familiar, not even the smells, but at the same time I felt at home. I felt like I was inside a living kaleidoscope that would obey my commands. And it was as if there was honey flowing

in my veins, an intense flow of desire. The path leading to the fountain formed a kind of maze that shifted and changed with every step I took. Shining, brightly-colored shapes were transforming constantly. I looked up and realized that the cloister didn’t have any walls, only peristyle columns. How can I describe it? I felt like this world was my own creation in a way, but at the same time I was only the instrument of a divine harmony.” [...]

“But why Creal? Why did that neologism come to you so suddenly out of nowhere?”

“I don’t know. I felt like I was entering the very depths of imagination and the heart of reality at the same time.”

“And you felt good?”

He concentrates, searching for the right words.

“Yes, it was truly a feeling of joy and confidence. I felt powerful, too, but with a gentle, harmonious kind of power.”

“Was that the effect of a series of coincidences? Of synchronicity?”

“It was like I’d touched the very essence of my own being. I felt like everything was connected.”

Gagarina^x’s face lights up.

“This magical cloister with a fountain in the center... that exactly matches the description of what people called Paridaiza in the time of the prophet Zoroaster. The true Paridaiza, the one represented on my Persian rug, and not a gilded prison filled with greedy avatars. That is your Creal: the secret of the original Paridaiza.”

“What secret?”

“None other than our spiritual roots. The yearning creativity that is the very essence of life. The imaginative desire that triumphs over our sinking, our collapse. The ancients called it the Poem of the Cosmos.”

“You seem to know a lot about it. What does any of this have to do with the code word *Strait*?”

“The Creal is the strait.” (pp. 151–154)

From the context of the fictional birth of the signifier, the reader may observe that Creal is defined as the “yearning creativity that is the very essence of life” and that, as a human essential possibility, it points to a harmonious unification of the subjective and objective experiences of the world.

The idea that creation or creativity is an immanent rather than only transcendent cosmological principle is typical of process philosophies, both

Western and Eastern, for example, in Heraclitus (Holm-Hadulla 2013, p. 297), Taoism (Yu 1981), Bergson, or Alfred North Whitehead for whom “Creativity is the universal of universals characterizing ultimate matter of fact.” (1929, p. 31). This onto-generative notion of creative becoming (Cheng 2018) has also been equated with a becoming-world of sublimity or absolute possibility (de Miranda 2020a). The object of crealectic intelligence is thus the relative possibilization and realization of possibility, the constant becoming real, biological, and social of natural creation, and the multimodal externalization and adunation of the multiple as source. While the generative concept of Creal is an all-encompassing ontological *a priori*, crealectic intelligence is an art or process of actualization more or less present in any singular transformation of the world. The more a protocol is repeated automatically, the more its crealectic capacity to actualize the possible is reduced. This is why a world ruled by computers, algorithmic standards, pervasive norms, bureaucracy, and other forms of “anthrobotics” is a danger to our relationship with absolute possibility (de Miranda, Ramamoorthy and Rovatsos 2016).

Crealectic Intelligence Versus Analytic Intelligence and Dialectic Intelligence

The experience of awe (see ► “Awe”), wonder (see ► “Wonder”), admiration, or imaginative questioning, which Aristotle and Descartes considered to be attuned to the origin of philosophy, may be seen as superfluous in sociotechnical protocols which are attached to an analytic exhaustion or exploitation of the Real. Mundane practices of engineering or mathematical ordering tend to keep the imaginative or desiring subject out of their equations in order to achieve an operational description and management of a system or problem. The early inventors of computational thinking were already aware that an essential part of intelligence was left behind in their analytic endeavors, namely a relationship to creativity and truth. When Charles Babbage and Ada Lovelace designed the first “Analytical Engine” by associating analysis with a mechanical function

of “operation” (Menabrea 1961, p. 247), Lovelace was careful to add: “The Analytical Engine has no pretensions whatever to originate anything. It can do whatever we know how to order it to perform. It can follow analysis; but it has no power of anticipating [...] (see anticipation) [...] relations or truths.” (p. 284). Analytics cannot by itself provide meaning, nor creative unification.

Analytic forms of intelligence were, however, a significant step in human evolution. Some 18 centuries ago, in his account of Aristotle’s *Analytics*, Alexander of Aphrodisias wrote that the one who “uses analysis [...] reduces composite bodies into simple bodies” (c.200 CE, 49, §2.4), thus separating an unknown into parts that are known (Arnauld and Nicole 1996, p. 200). Analytic elements manifest as what Noam Chomsky called a “surface structure” (1968, p. 30), represented by discrete symbols such as letters, code, labels, or forms; analytic intelligence thus considers reality as a readable corpus or text. It is a moment of distinctive literacy facilitating communication and the effectual manipulation of the Real. The analytic moment is the consideration of the world as possible syntax instead of chaos, or, in the language of artificial intelligence, patterns versus noise.

Searle’s famous distinction between syntax and semantics (1980) aimed at explaining why computers do not have an understanding of what they do and therefore cannot be said to be intelligent: “Computation is defined purely formally or syntactically, whereas minds have actual mental or semantic contents, and we cannot get from the syntactical to the semantic just by having the syntactical operations and nothing else” (Searle 2010, p. 17). Beyond these traditional objections to artificial intelligence, there is what we might call the Whiteheadian objection to the belief that analysis and its concreteness are sufficient to understand the Real: analytic intelligence, while useful for purposes of manipulation and operability, often ends up mistaking the abstract object for the concrete in a “fallacy of misplaced concreteness” (Whitehead 1926, p. 64). Out of habit or cognitive bias, we tend to believe that the parts, units, or functions that we distinguish and name are truly there in the real world, like cogs in a machine rather than metaphors. If

we take the example of mental health diagnoses, such as bipolarity, depression, or attention deficit hyperactivity disorder, the fallacy of misplaced concreteness pushes individuals to consider these diagnoses as describing their essential identity or inner nature. Seeing their soul as a psychiatric object rather than a site of self-possibility, these individuals are led to believe that other objects such as pills, via the mechanical law of causality, can regulate their being in the world.

Yet, phenomena of reality ambivalence (see ► [“Tolerance of Ambiguity”](#)) happen precisely because our cognition is not only analytic but also cocreative (Berthoz 2012). Our consciousness produces semblances of emergence (see ► [“Emergence”](#)) and meaning that supersede the sum of the observed parts and cannot be explained by strict analysis (Murphy and Stoeger 2007). In the past, analytic philosophers, tempted by materialism and the ideology of concreteness, have ironically called this surplus of meaning the “ghost in the machine” (Ryle 2009 [1949], p. 5). According to the crealectic frame, to call what we experience but cannot fully analyze, measure, demonstrate, or materially evidence a “ghost,” or speculative superstition, partakes in a reductionism that can be “detrimental both to good science and good human living” (Thompson 1997, p. 219). Ultimately, it is claimed that crealectic intelligence is already present in protocols that are usually seen as purely analytic, for example, the selection or distinction between useful data and neglectable noise.

Social intelligence implies a discursive negotiation and a creative focus that requires the concurrent display of dialectics (see ► [“Dialectics”](#)) and crealectics. Since Plato, dialectic intelligence designates an interpretative conversation in which there is a more or less rational tension between different or agonistic perspectives (from *dialegesthai*: to talk through). Dialectics is “the progression of thought through the appearance of oppositions within one and the same unity” (Bloch 1983, p. 288). This form of thinking can be performed between different subjects or within the same personal mind, as in Socrates’s inner dialogue with his guardian divinity, his daimonion (McMahon 2013, p. 40), or as in Descartes’

cogito, which can be defined as the human capacity for internalized individual dialectics, a form of consciousness that is capable of self-contradiction or self-examination.

In Hegel’s variant, dialectic intelligence describes the ubiquitous and necessary unfolding of a time-dependent process of negations and performative contradictions toward the realization of absolute Spirit. Hegelians believe that the Real is itself dialectical, and therefore that dialectic intelligence is a privileged form of deterministic realism leading to objective knowledge: “the dialectical constitutes the moving soul of scientific progression” (Hegel 1817, §81). In Hegelian dialectic consciousness, a proposition and its opposite can be both true, thus apparently ignoring the law of noncontradiction common in analytic logic. For instance, daydreaming and working: Every artisan or creator knows that daydreaming is not the opposite of working, but a modality of making-possible. Individual, bilateral, or collective forms of dialectic intelligence rely on polarities, tensions, and potential contradictions in a process that is ideally moving toward a form of reconciliation, resolution, or synthesis that reflects the movement of the “World-Soul” toward the realization of freedom on earth (Hegel 1806, p. 114).

The crealectic view argues, however, that when fetishized as a one-size-fits-all tool, as for example in the Marxist variant, or the Sophists’ version of the Ancient Greek variant, dialectics sometimes forces unnatural syntheses. In the agonistic world of dialectics, the illusion might be that there is not enough space for all, and it becomes difficult to identify if a synthesis is logical or rather belongs to a power struggle between different interests. Few can avoid being emotional in an antagonistic dialogue, and even Hegel admitted the importance of passion in dialectic unfolding. Hypercommunitarian times demonstrate the pitfalls of dialectics: Any legitimate position of dominance can be seen as a scandalous usurpation. Incessant phenomena of polarization of worldviews, accelerated by digital echo chambers, manifest a possible enclosure of dialectics into a friend-enemy or same-different combat.

The dialectic stage of understanding is necessary to transform a reading of signs into a

deliberative interpretation that subsumes real or apparent contradictions. However, this moment of intelligence is not sufficient to act upon the world because the synthesis it proposes can be contested and, by definition, negated anew: If the world is only dialectically interpreted, it may become an interminable process in which everything turns negative and positive alternatively, any synthesis being an ephemeral plateau collapsing into a new thesis-antithesis dynamic. Dialectics tends to fall into binary dichotomies, which are themselves cognitive reductions, even if the intention is to introduce more complexity than analytic intelligence (Elbow 1993). For example, the two categories of disease and normal health are oblivious of possible alternative mental or physical states that are neither normal nor unhealthy (Canguilhem 1991, p. 97). The human phenomenon of psychological resilience is neither pathological nor normal: It is a “novelty,” a manifestation of crealectic intelligence (de Miranda 2019).

Social reality is polysemantic and implies a multiplicity of decisions and acts in which the very factualization of data, the attribution of a syntax to a given reality, are already filtered by creative and active imagination (see ► “Imagination”) and an embodied perspective. Crealectics aims at describing the form of consciousness that is aware of acting as an engaged and unified person upon a world of multiplicity with the ideal of cocreation in mind.

Crealectic intelligence transcends the borders of the actual and of the Real and, therefore, is related to the experience of sublimity. Artists have known or felt for long enough that creativity as ultimate principle is a relationship with the intuitions of alterity, of wholeness, and of the sublime, “the incommensurability of reality to concept” (Lyotard 1984, p. 79). Even for non-artistic practitioners, the experience of the sublime, for instance, in contemplating nature or in confronting a new culture, manifests itself as surreal or hyperreal awe, beyond the analytic routines: “Sublimity lifts the Absolute above every immediate existent and therefore brings about the liberation which, though abstract at first, is at least the foundation of the spirit” (Hegel 1835, p. 362).

Sublime feeling sensitizes us to an “outside and an inside” in thought, to a creative “hyper-dialectic” between imagination, reason, flesh, plurality, and ambiguity (Merleau-Ponty 1968, p. 94). Within the crealectic approach, healthy human life and healthy thought need to host regular moments of felt sublimity, as a necessary condition to reconnect with the possibility of regeneration or novelty. The intuition of creal sublimity, the possible as absolute, becomes “the transport that leads all thought (critical thought included) to its limits” (Lyotard 1994, x). This paradoxical capacity to pursue belief or knowledge about something we typically ignore, but feel or desire to be real, can be productive of new knowledge and new forms of dealing with existence: It suggests the effectual agency of what Einstein called “creative imagination” (Holton 1978, p. 96). Notoriously, Einstein was often daydreaming about the possible in order to actualize new forms of understanding nature, space, and time.

Crealectics and the Possible

In remaining open to the “creative generosity” of life (Canguilhem 1991, p. 188), the democratization of crealectic intelligence may allow for a new form of global consciousness, one that would expand the domains, diversity, and agency of the possible (see ► “Possible in Philosophy”). Crealectics is a program of harmonization of our capacity to feel, imagine, envision, realize, and actualize a world emerging from the cosmological source of the Real as a metaphysical “possibility of possibility” (Slife 1994). Crealectic intelligence deals with processing realities and imaginaries of novelty and plurality rather than mere contradiction of binary polarities or analytic operation of known bits; its ontological core is the philosophical idea of creation understood ontologically as a ubiquitous stream of absolute possibility (Bergson 1911; Whitehead 1929; Deleuze and Guattari 1994; de Miranda 2017). We may think of the crealectic emotion as the opposite of depression. In the latter experience, one may feel like the earth is an empty rock, devoid of anything

but cardboard illusions. In the crealectic experience of the world, we are not looking at reality as a source but as a compossible manifestation and interpretation among many others of *creality*, a source of infinite abundance of possibility.

As was understood by existentialist philosophers, chief among them Sartre and Heidegger, the universe is a possibilization furnace. The simultaneously immanent and transcendent – “transimmanent” (Nancy 1996, p. 48) – ground of ever-emerging possibilization (*Ermöglichung*) is conceived as *opening for the making-possible* (Heidegger 1995, p. 364; 1996, p. 244). This cosmological opening may be summarized in a simple modal formula: “It is possible,” where *It* designates the ultimate being-becoming (de Miranda 2020a). “There is a practical consciousness, an ‘I can’ that underlies and precedes the reflective self-consciousness of the ‘I think’, but the ‘I can’ is given and coeval with an ‘it can’” (Sinclair 2017, p. 191). The Surrealists, for instance, trusted this source of creation when they produced their works of art based on letting go of the obsession of controlling consciousness analytically.

When one embodied living being says and feels, of a projected situation or idea, for instance, that *it is possible*, they are connecting with the modal creal spacetime. The embodied formula is – at least asymptotically – performative: It begins to produce something, it is the gateway to transform a virtuality into a reality, and it *possibilizes* or “*crealectizes*” (de Miranda 2020a). The felt experience of possibility creates a bridge between the imaginary and the real. Human instances of this generative feeling abound: Think of any founder slowly manifesting, day after day, the metamorphosis and growth of an impression or ideal into a real space of experience.

In other words, as argued by Bergson, the possible is not a deterministic program contained in the past, but rather continuous participative co-creation, or “organic possibility” (Gunter 2007, p. 38): “This extensive continuum expresses the solidarity of all possible standpoints throughout the whole process of the world” (Whitehead 1929, p. 103). In order to express the interdependence not only of all things but also of the physical, the

psychological, and the spiritual realms, the crealectic approach distinguishes three modes of possibility which correspond to the three types of intelligence we have evidenced: the *physical possible*, the *psychological possible*, and the *philosophical possible*. The physical possible relates to conditions toward the analytic realization of discretizable things via material causality. The psychological possible relates to the dialectic realm and its movements of tensions, dualities, and degrees of liberty or alterity. The third mode, the philosophical possible, originates in the crealectic intelligence process, by which thought as a spiritual property of the universe transmutes (into) the other two possibles. Attempts at explaining how this transmutation might be brought about constitute the history of philosophy itself, from Plato to Hegel et al., from hermeticism to process philosophy. For a crealectician, philosophy is not the mere logical analysis of truth conditions, but the self-questioning enterprise of thought regarding its own possibilizing and world-making power. Thought, desire, persistence are performative; crealectic intelligence is generative.

Summary

The term “crealectics,” coined by philosopher and author Luis de Miranda (2017), is a compound of “Creal” (from “creative” and “Real”) and of two possible suffixes: “logos” (from the Greek word designating a universalized meaning) or “ektos” (from the Greek root meaning “toward the outside,” “outer,” or “external”). Crealectics addresses the intuitive way through which we unify realities and imaginaries of novelty, plurality, and ambiguity, in a cocreative manner rather than via mere contradiction of binary polarities or analytic operation of known bits. The ontological core of crealectics, the Creal, is the idea of creation understood ontologically as a ubiquitous and transimmanent stream of absolute possibility. The crealectic frame posits that there are three complementary and effectual domains of intelligence, namely analytic, dialectic, and crealectic, being alternatively or complementarily used in human

interaction with the world. The objects of crealectic intelligence are the relative possibilization and realization of absolute possibility, the becoming real, biological, and social of creation, and the multimodal externalization and asymptotic unification of an axiomatic creative flux, via three realms of possibilization, physical, psychological, and philosophical.

Cross-References

- [Anticipation](#)
- [Awe](#)
- [Dialectics](#)
- [Emergence](#)
- [Imagination](#)
- [Intelligence](#)
- [Possible in Philosophy](#)
- [Potential](#)
- [Tolerance of Ambiguity](#)
- [Virtual Reality](#)
- [Wonder](#)

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Creating the Future

Arran Gare

Philosophy and Cultural Inquiry, Swinburne University, Melbourne, VIC, Australia

Abstract

“Creating the future” is a notion introduced by Alfred North Whitehead to define the task of universities and the function of philosophy. Implicitly, it is a rejection of the idea that the future is already determined and, in some sense, already exists as part of a block universe, with the appearance of temporal becoming an illusion. “Creation” originally meant “the action of causing to exist” or “a coming

into being.” The “future” is not normally considered to be what can be created. Originally, it meant “yet to be.” It now tends to be defined in relation to time, as “the time to come,” where “time” is assumed to be an independent existent along with space as the “containers” of material beings, with the future in some sense preexisting its becoming present. The quantity of “matter” or “mass-energy” is assumed to be constant and to change its position and configurations in predictable ways over time. To refer to the future as being created is to reject this view of the universe and the basic concepts that define it, replacing these with concepts that can make intelligible the freedom of and creativity of people, the future as in process of being created, and humans as partially responsible for what future is created. It is to recognize that there are real possibilities that can be envisioned, understood, chosen, and brought into existence, with some of Whitehead’s followers claiming that new possibilities can also be created.

Keywords

Creation · Future · Universities · Philosophy · Ecological civilization

Historical Context

“The task of a university,” wrote Alfred North Whitehead in the epilogue to his book *Modes of Thought* (1938, p. 171), “is the creation of the future, so far as rational thought, and civilized modes of appreciation, can affect the issue. The future is big with every possibility of achievement and tragedy.” This proclamation, while appearing simple, is founded on a speculative philosophical system that challenges and attempts to replace assumptions that have dominated science and the broader culture since the seventeenth century. From the perspective of scientific materialism originating at that time, there is no creation, except possibly an original creative act by God in creating the universe with all its components and laws of motion. It was a conception of the universe consisting of inert matter moving

endlessly, meaninglessly according to immutable laws, and the success of science was defined in terms of how everything else that appeared or happened in the world could be explained as merely the effects of these laws of motion. It was essentially a deterministic, block universe. While science has moved beyond this conception of the universe in detail, giving a place to a diversity of elementary particles and forces and to energy and information, mainstream science is still dominated by assumptions put in place by Newton, requiring of explanations the construction of mathematical models that map out all possible states of a system and show which possible states must necessarily have been or will be, given boundary conditions and the current state. Possible states are mere mathematical constructs for specifying what is in the present, what has been in the past, and what must necessarily be in the future. Including some indeterminacy in these models and accepting probabilities accords more significance to possible states, but not much more.

From this perspective, living beings, including humans, are complex machines, and free will is an illusion, even if some indeterminacy is acknowledged. Organisms survive because their structure ensures that they operate to maintain and reproduce themselves in competition with other living beings or, perhaps as Richard Dawkins argued, reproduce their genes. As Thomas Hobbes (1982, p. 113) argued, thinking ultimately is nothing but adding and subtracting, and science is knowledge of how to control the world to satisfy appetites and avoid aversions, most importantly death. The most important additions to this cosmology since Hobbes as far as characterizing life and mind are concerned have been Darwinian evolutionary theory and the addition of information to what exists (along with matter and energy and forces of attraction and repulsion), equated to negative entropy. DNA, making up our genes and determining our adult form, encodes information. The brain processes information just as computers do. Modern science, characterizing living beings as information-processing cybernetic machines and explaining human interactions through game theory and economic models, upholds a Hobbesian/Darwinian worldview.

While this cosmology provoked a reaction from philosophers defending the reality of consciousness, free will, and grounds for ethical action transcending egoism, even Immanuel Kant and Friedrich Schelling who were most concerned to defend the reality of freedom still accepted a deterministic universe. Such determinism was challenged by Henri Bergson who argued that there is an asymmetry between the present and the past and the present and the future. In *Creative Evolution* (1983), he argued that the future, while influenced by the past, is open and that genuine creation, not entirely determined by the past and not simply random, is possible. In *Process and Reality* (1978), Whitehead developed a speculative cosmology based on advances in logic and the sciences that would rigorously defend this view of the universe. Identifying, questioning, and rejecting deep assumptions that had dominated thinking since the Ancient Greeks and had crystalized with scientific materialism, most importantly the notion “substance,” Whitehead developed a categorical scheme that made “creativity” the first category of the “ultimate,” the most basic category through which all that exists are defined.

What this means is that Whitehead was rejecting the idea that there is some “substance” – “matter” or whatever – that is moving, rearranging, or reorganizing predictably over time, arguing that the universe consists of “organisms” understood as self-creating processes. What exist first of all are “actual occasions,” the being of which is constituted by their becoming. These elementary organisms do not exist in isolation but only become only through relating to past and contemporary processes. They are constrained by these, but not completely determined by them. They are capable of and do form into “societies,” which are more complex “organisms.” In Whitehead’s categorical scheme, there are also “pure potentials” or possibilities, characterized as “forms of definiteness,” which can be selected and realized as “ingredients” in these creative processes of becoming. Originally, Whitehead referred to these potentialities as “eternal objects” but, later, dropped this term. Later philosophers inspired by Whitehead’s philosophy argued that, with the evolution of the universe, new possibilities come into existence (Code 2002).

It is in terms of this philosophy that Whitehead developed his notion of creating the future, defending the reality of human freedom, and characterized universities as participating in creating the future.

What Is “Creating the Future?”

Given Whitehead’s characterization of universities and philosophy as playing a role in creating the future, developing the notion of “creating the future” is itself participating in creating the future and illustrates what it involves. In *Modes of Thought* (1932), Whitehead railed against philosophers who worked within the limits of the dictionary on the assumption that humankind has already entertained all the ideas required to elucidate experience. It is here that he defended philosophy as “an attitude of mind towards doctrines ignorantly entertained.” He continued, “The philosophic attempt takes every word, and every phrase, in the verbal expression of thought, and asks, What does it mean?” (p. 171f). To overcome the limitations of language, words must be defined and redefined. As he wrote in *Process and Reality* (1978, p. 4), “Words and phrases must be stretched towards a generality foreign to their ordinary usage; and however such elements of language be stabilized as technicalities, they remain metaphors mutely appealing for an imaginative leap.”

In stretching words, it is clearly necessary to assume that they have some meaning before they are stretched. The words “creating” and “future” have common sense meanings, although these are not entirely clear and they have altered over time, and both are more limited than implied by Whitehead’s use of these words. With our positivistic understanding of science and technology, which Whitehead and his allies have been concerned to oppose, “creating” is accorded little place. Advances in science are taken to be the outcome of investments employing trained people to apply the scientific method to accumulating knowledge, which now can be equated with information, with metrics being developed to measure efficiency in its production. Evolutionary epistemology characterizes this as a further rearrangement of matter,

energy, and information in the struggle of cyborgs for survival and domination, which with enough knowledge could be explained and, in principle, predicted. “Creation” has been accorded a greater place in the arts and humanities. This is associated with the celebration of writers and artists who produce something entirely different than has ever been produced before. However, this trivializes this area of culture (and creativity), which, as Hobbes (1982, p. 102) argued, should be regarded as amusements and nothing else. This view of the arts and, along with the arts, the humanities has engendered fashions changing at ever faster rates, without any evidence of progress. Only science and technology facilitating more efficient control are recognized as achieving and contributing to progress. In placing rational thought and civilized modes of appreciation at the center of creating the future, Whitehead was rebelling against such thinking, portraying the great advances of science and technology along with the arts and humanities as major creative achievements.

It was in carrying through this rebellion that Whitehead made “creating” central to his speculative cosmology. The coming into being of elementary particles, galaxies, and stars with planets were essentially creations, as were the emergence of life on Earth, ecosystems, multicelled organisms, animals, and humans. Creation is also evident within these created processes, for instance, in the development of embryos into fully functioning organisms and human newborns into cultured individuals able to participate responsibly in social and cultural life. While scientific materialists attempt to explain away such creative developments, for instance, by explaining epigenesis in organisms as simply control by DNA of biochemical reactions, scientists influenced by Whitehead see such developments as deeply problematic for mainstream science.

It is not just a matter of having to accept the reality of emergence. “Emergence” names a problem, not a solution, especially when considering the emergence of sentient life and consciousness. Construing being itself as essentially creative was Whitehead’s solution to the problem of emergence (Gare 2002). New self-stabilizing patterns or “organisms” coming into existence, some radically different from the conditions of their

emergence but dependent upon them, were made intelligible by Whitehead through giving a place to creative self-formation of “organisms.” As actual occasions or societies of actual occasions, these “organisms” can realize entirely new possibilities or, as Whitehead characterized them, new forms of definiteness. These in turn make possible further creative emergence, creating further possibilities. The formation of the solar system created a planet that provided the conditions or possibility for the emergence of life. Primitive life made possible the emergence of sentient beings, then conscious beings, and then humans with language and then specialized discourses and institutions of learning, leading to the emergence of philosophy, mathematics, science, and literature. In this way, the possibility was created for philosophers to develop their understanding of the cosmos and to become conscious of its creativity and of their own work as participation in its creation.

Rejecting the Newtonian conception of time as an independently existing actual entity, Whitehead (1978, p. 320) argued that the past and the future must be defined in relation to the duration of actual occasions and causal efficacy. The past is that which present actual occasions are responding to, while the future is that which these actual occasions can causally influence. There is not only one duration but also a multiplicity of interrelated durations. Diverse actual occasions create the continuity of extension, which is the most general form of connectedness between them. Extension is real, because relations are real, but it is not actual but potential. As Whitehead (p. 66) put it, “[t]his extensive continuum expresses the solidarity of all possible standpoints throughout the world; it is the first determination of order – that is, of real potentiality – arising out of the general character of the world.” Space and time are aspects of this extensive continuum, an order of potentialities for independence and interaction created by durational processes which, as processes of becoming, are creating space and time. Space and time are not the preexisting containers of durational processes but are themselves created relations that, as ordered patterns of potentialities, become components of these processes.

Universities and Philosophy in the Context of Creative Evolution

As conceived through more recent Whiteheadian cosmology, the evolution of the universe, life, and humanity have generated an increasing range of new possibilities and capacities to explore and embrace these. It took a billion years for eukaryotic cells that could combine to form complex multicelled organisms to evolve from primitive life. It took several 100,000 years for *Homo sapiens* to develop civilizations, making possible the development of literacy and educational institutions, providing the conditions for the development of rhetoric, history, mathematics, and philosophy. It took 2000 years before history, mathematics, and philosophy engendered experimental science. In each case, new possibilities were generated and embraced. The nature of this emergence is evident in the sequence of life forms. Plants have possibilities for altering their conditions of survival by being able to grow toward light and send roots down to water and produce chemicals to deter parasites. A sequence of new possibilities opened with animals being able to move. A snake responds to its immediate perceptual field and will pursue a mouse, but if the mouse disappears, the snake will cease pursuit. If a cat is pursuing a mouse and the mouse disappears, it will continue pursuing the mouse. Its cognition extends to what is not immediately present in its perceptual field. Humans through language can consciously develop their cognition over generations, enabling them to develop their comprehension of the entire universe and its history and envisage possibilities that have never existed.

This capacity was greatly augmented through the development of history, mathematics, and philosophy and then experimental science and the institutions to advance these. New scientific theories not only explain what is but also reveal new possibilities. Thermodynamics postulates absolute zero Kelvin (K) at -273°C as the lowest possible temperature. The universe is cooling so that outer space is now 2.7°K . Humans have now been able to cool helium down to very close to 0°K , which, unless there are other intelligent beings in the universe, is a temperature that has

never existed before. This could open up the possibilities of new forms of technology exploiting superconductivity or superfluidity, just as Maxwell's explanation of light as a propagating wave of electromagnetic fields enabled Hertz to discover radio waves, ushering in a sequence of new forms of electronic media and other forms of technology, opening new possibilities for communication and organization of societies.

Such technological advances most clearly manifest the role of rational thought in creating the future. However, Whitehead was also concerned to defend the role of civilized modes of appreciation. Predicting the possible consequences of actions, including such technological developments, and evaluating these and then choosing to avoid paths heading to disaster are far more difficult. History is one of the most important disciplines in this regard. History originated in Ancient Greece as *istoria*, learning through inquiry into the causes and consequences of conflicts (exemplified by Thucydides' *History of the Peloponnesian War*), and then acquired a broader meaning, eventually becoming what we now understand as history. History is central to all intellectual endeavors and all complex human actions, from building a house to creating a civilization, since history is required to comprehend what has been achieved in the past, what is the present situation, what are the unfinished projects, and what are their problems. History is required to situate each agent, whether individual or organization, in the context of these projects and problems, and therefore to reveal what is required to advance these projects. The development of advanced mathematics, philosophy and science would not be possible without their history. Without history, disciplines fragment into fashions. History is also required to evaluate such developments and projects and to identify their goals, their trajectories, and their unintended consequences. In a major and very influential work of history, Whitehead in *Science and the Modern World* (1932) portrayed the scientific revolution of the seventeenth century as a triumph of the achievements and potential of mathematics, combined with developments in natural philosophy that

revealed the possibility of advancing knowledge through performing experiments, seen at the time in the broader context of fulfilling God's role for humans on Earth, showing how it led to the industrial revolution. This in turn led to undreamt of affluence, the triumph of European imperialism, increasingly destructive wars, the development of nuclear weapons capable of destroying civilization, a population explosion and the destabilization of the global ecosystem through the production of greenhouse gases, and the destruction of local ecosystems that now threaten the future of humanity.

It is in this context that Whitehead's claim for the role of philosophy in creating the future should be understood. For Whitehead, philosophy is not one discipline among others, but the discipline that puts all specialist areas of enquiry, including history, mathematics, the different disciplines within science and the arts, into perspective. Striving to achieve a coherent, comprehensive understanding of the cosmos and its history and our place within it, philosophy questions the assumptions of specialists and reveals alternative research programs while acknowledging that full understanding can only be approached and never finally achieved. Striving for self-understanding, philosophy defines what humans are in all their complexity as individuals; as members of communities, institutions and civilizations; as a species; and as a form of life. It has the task of revealing the possibilities for achievement and destruction in all of these and the responsibility of each individual participant. It is part of human self-creation. It is on this understanding that Whitehead could characterize the task of a university as the creation of the future and then portray philosophy as central to this.

Life and the Future of Civilization

Reflecting on the history of philosophy in relation to the scientific revolution of the seventeenth century and its consequences, in *Science and the Modern World* (1932, p. x), Whitehead portrayed philosophy as follows:

... the most effective of all the intellectual pursuits. ... It is the architect of the buildings of the spirit, and it is also their solvent:- and the spiritual precedes the material. Philosophy works slowly. Thoughts lie dormant for ages; and then, almost suddenly as it were, mankind finds that they have embodied themselves in institutions.

This claim was defended in the broader perspective of the whole history of European civilization in *Adventures of Ideas* (1933). The last part of this book was devoted to characterizing civilization conceived as the realization of human potential as the ultimate goal of humanity.

Whitehead's philosophy was designed to advance civilization by addressing and overcoming the basic flaws in the culture of modernity engendered by the scientific revolution. He was principally concerned to challenge positivist theories of knowledge and replace scientific materialism, overcoming the division in modern civilization between science and the humanities and all the problems engendered by this division. This involved a new understanding of nature and of life, reinterpreting recent advances in physics, and making intelligible the emergence of subjects and consciousness within nature. The most important group of people inspired by Whitehead were not professional philosophers but scientists; however, these scientists embraced Whitehead's grand vision for philosophy and its role in science and civilization and contributed to developing this philosophy. To begin with, Whitehead's main influence was on biologists, notably the theoretical biology movement led by C. H. Waddington and Joseph Needham.

The theoretical biology movement was opposed to the reductionism of biochemists and orthodox Darwinists and focused on embryology and epigenesis. The problem in embryology is to explain how cells dividing and multiplying differentiate and generate the complex forms of adult organisms. Inspired by Whitehead, Waddington characterized this as a self-causing process developing on necessary paths, or chreods, through individuation engendering subprocesses and sub-subprocesses, etc., associated with specific organs and their components. These necessary paths are self-stabilizing and, if development is deflected,

will return to their paths. However, these processes can become unstable and switch to different paths or be captured by other processes. DNA plays a role in influencing these paths of development and which paths will be taken but should be seen as encoded instructions to be utilized by the developing organism rather than the organism being determined by it, without any simple one-to-one correlation between DNA and the phenotype or adult organism. Also, which paths are taken can be in response to the environment of the developing organism. That is, while these necessary paths imply some predictability in patterns of development in nature, there are other possible paths that could and, under certain circumstances, would be taken. While developed to characterize the processes of embryology, Waddington believed these concepts could be generalized to characterize developments elsewhere, including developments in ecosystems, cognition (supporting the work of Jean Piaget), and human societies. Formalized mathematically by René Thom as catastrophe theory, others extended these ideas even further. Catastrophe theory has been utilized in physics, chemistry and biology, in the study of animal behaviour, in sociology and economics, in the study of politics and public opinion, and in psychology.

Waddington's colleague, Joseph Needham, became an historian of science and a sinologist. His massive study *Science and Civilization in China* (1954–2015) examined the different trajectories of Western and Chinese science in the context of the histories of these different civilizations. Whitehead had argued that his thought was more in accordance with Eastern than Western thought, and Needham took Whitehead's organic philosophy as a key to understanding Chinese thought, showing that through the influence of Chinese thought on Leibniz and the influence of Leibniz on Whitehead, Whitehead's philosophy was influenced by Chinese thought. He argued that the Song Dynasty neo-Confucian Zhu Xi, who had integrated Daoist and Buddhist ideas into Confucian philosophy, with his concepts of *qi* (energy) and *li* (pattern) had anticipated the modern scientific view that nature consists of patterns or energy developing on different paths. Applied

to civilizations and to the development of science, Needham was showing that very different paths could be taken by humanity, and science itself could develop in different ways, although he claimed that the synthesis of Chinese thought with Western science being developed by the tradition that Whitehead was advancing was superior to all previous science.

Considering the “requisites for social progress,” in *Science and the Modern World* (1932, p. 244), Whitehead identified the main threats to such progress: “The two evils are: one, the ignorance of the true relation of each organism to its environment; and, the other, the habit of ignoring the intrinsic worth of the environment which must be allowed its weight in any consideration of final ends.” Waddington was one of the early followers of Whitehead to focus on the problem of environmental destruction and sought to work out what humans could do to prevent this. Embracing Whitehead’s claim that we are creating the future, his reflections on this were published as his last book *The Man-Made Future* (1978). Here, he showed how the concepts he was developing could be applied to dealing with these problems. Lao Tzu (n.d.) is attributed the observation that “Unless you change direction, you are likely to end up where you are going.” With scientific materialism, there was no possibility of changing paths. Humans, as survival machines for DNA, will act predictably in their own interests, with some immediate concern for other members of their species sharing their DNA but no ability to work for the common good of humanity or life, making the trajectory we are on unavoidable. The Whiteheadian-inspired science of Waddington, along with Needham’s sinology, reveals the possibility of taking a different path. Ecological economics, also strongly influenced by Whitehead through the work of Herman Daly and John Cobb Jr. (1994), shows how economic institutions can be developed to ensure the economy serves the common good of humanity, understood as communities of communities, and prevent ecological destruction.

In 2007, the Chinese government was convinced by environmentalists that ecological destruction, including global warming, would be

disastrous for the future of China and for the world. Pan Yue, the vice minister of China’s State Environmental Protection Administration, argued that since Chinese would be worse affected than other people, China needed to lead the world in creating a global ecological civilization. The government embraced the goal of ecological civilization, although not necessarily in the radical form envisaged by Pan Yue and his allies. Philosophers, economists, ecologists, and other scientists around the world influenced by Whitehead embraced and promoted this goal for the whole of humanity. They are claiming we are not condemned by human nature to continue on our present path of ecological destruction to increase our own immediate affluence and to win out in power struggles at the expense of our common future. There are real possibilities, yet unrealized, for creating a world order committed to augmenting the conditions for life and humanity, including the life of the global ecosystem of which human communities are part (Gare 2010).

Summary: Creating the Future and the Possible

Defining the task of a university as creating the future was not merely rhetoric on the part of Whitehead. It was spelling out the implications of a cosmology that he had presented and defended as the basis for understanding and advancing recent developments in science and redefining nature and life and the place of humanity within nature. This was presented as part of the effort to overcome the dualisms afflicting modern civilization where the scientific revolution of the seventeenth century had rendered sentient life and mind unintelligible, resulting in an irreconcilable division between the sciences and the humanities. While the humanities originated in the Florentine Renaissance with the quest to inspire people to defend their liberty, take responsibility for their actions, and realize their potential to govern themselves, science rendered the notion of responsibility an illusion. Knowledge was seen as the means to make predictions and to control nature and people efficiently, and the drive for this

efficiency was explained through people's appetites and aversions, being themselves products of arrangements of matter that had survived against rivals because of this drive. In the conflict between the sciences and the humanities, the humanities were already facing defeat in the early part of the twentieth century when Whitehead was developing his philosophy. Whitehead's cosmology was not only a defense of the humanities through aligning science with it but also a clarification of its aims, identifying these with the advance of civilized modes of thought and civilization itself. Drawing on the entire past of European civilization while stretching words to create new meanings, Whitehead's philosophy was itself an instance of the creative advance of civilization, enabling this creativity to be understood. By encapsulating its implications in the phrase "creating the future" to redefine the function of the university, he was helping to create the future.

In mounting this defense of civilization, Whitehead accorded a central place not only to creativity but also to potentialities or possibilities. Scientific materialists accorded a place to possibilities only as means to represent what is the current state of matter and what necessarily must have happened in the past and will happen in the future. Without major revision, scientists could also allow that without detailed knowledge, it is necessary to be satisfied with making predictions of probabilities or even allow that basic laws of physics are not entirely deterministic. In these cases, possibilities are accorded some significance and even ontological status but are accorded no causal efficacy. For Whitehead, possibilities are ingredients in the elementary beings of the universe and its basic "organisms" or processes, and their role is accentuated with the more complex processes of life (what have come to be known as "anticipatory systems"). With evolution, possibilities grasped as potentialities have become increasingly important aspects of agency. With humans, rational modes of thought have greatly increased the potentialities of humans to transform their worlds. However, these potentialities can be destroyed as innovations can take on a life of their own as people become addicted to the short-term benefits they provide, either satisfaction

of their appetites or power over others. It is science as the quest for understanding beyond being an instrument for developing technology, along with civilized modes of appreciation cultivated by the arts and humanities, that humans through their educational institutions can come to appreciate their role in creating the future, revealing new possibilities, and judging which possibilities should be aspired to and thereby incorporated into projects. The importance of recognizing this has become manifestly evident in the face of the global ecological crisis, and people inspired by Whitehead are striving to reveal the possibility of and to create a new kind of civilization based on affirming the value of life and a commitment to augmenting life, not only contemplatively but also in practice. Universities are central to this task.

Cross-References

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Creative Cognition

Margaret Mangion

The Edward de Bono Institute for Creative Thinking and Innovation, University of Malta, Msida, Malta

Keywords

Cognition · Creativity · Possibility · Thinking

Definition

Creativity is a complex phenomenon which necessitates a vast array of methods for us to understand its various segments. As a relatively young discipline, it is in constant evolution with new emerging fields of study including the possible. Cognition involves the process of acquiring knowledge and making sense of things through learning, experience, and the senses. From the point of view of creativity, these aspects merit attention and further exploration. “Creative cognition can be understood as a set of cognitive processes that support the generation of novel and useful ideas” (Beatty et al. 2016: 87). Cognitive processes support creative production through creative cognition. Ward and Kolomyts (2019) affirm that the generation of complex concepts and outcomes in a cumulative way is unique to humans. We are able to think in a wide variety of different contexts and in complex ways. These are key features that distinguish us from other animal species.

In line with many definitions of creativity, creative cognition elucidates how basic mental processes make use of stored knowledge to provide novel and effective solutions (Runco and Jaeger 2012) that are also appropriate to the task. Another dimension to the definition of creativity emerged more recently from the area of the unexpected, namely, the element of surprise (Glăveanu 2021; Ross and Webb 2022; Simonton 2012). While it is sometimes argued that such approaches reflect innate creative genius, through the creative cognition approach it is postulated that these qualities are available to all without distinction and are based on cognitive operations that (while affected by individual differences) can be performed by all (Ward et al. 1999).

Initially, two main categories of cognitive processes underlying creativity were identified by Guilford (1968); divergent thinking and transformative abilities. Guilford stipulated that while divergent thinking encourages thinking in different directions (like when we generate alternate uses for everyday objects) by implication, transformative abilities require individuals to engage with new patterns of thinking to generate new ideas and thus, break out of old configurations. This notion of transformative abilities implies that our perception of the world may shape the ideas we generate.

Due to the adoption of different perspectives, to date scholars have not yet pinned down a single comprehensive conceptual framework to address creative cognition. However, it must be noted that similarities between different models exist. For instance, Finke et al. (1992) developed the Geneplore model of creativity which was more intended as a descriptive model rather than an explanatory theory of creativity. The term Geneplore combines the terms generate and explore. The authors claim that creative activity takes place when we first generate new ideas and then explore their possibilities and suitability. This mental process seems to stimulate creative thinking. Exploring the Geneplore model, one finds three main components; generation of pre-inventive structures, preinventive exploration, and interpretation and product constraints. The generation of preinventive structures is constructed during the initial stages of the process.

Interpretation of these structures takes place during an exploratory phase where the focus or expansion of the concept being explored may take place. The emerging insights are then directed to defined problems or else they may also be elaborated on through the modification of the initial preinventive structures and a repetition of the cycle. Constraints on the process may be applied at any time. Although this model is similar to Guilford's cognitive framework because of its emphasis on both divergent and convergent modes of thinking, the Geneplore model offers more depth through the explicit use of the five steps: generative process, preinventive structure, preinventive properties, exploratory processes, and product constraints.

Runco and Chand (1995) designed a two-tier model of creative cognition. This model includes three main components, namely, problem finding, ideation, and evaluation. These core components share similarities with the Geneplore model. Runco and Chand, however, elaborate on their model by including a second tier explicating the role of knowledge which can be procedural or declarative, and motivation which in turn can be intrinsic or extrinsic. The authors take into consideration the relationship that knowledge and motivation may have on each other and on the core components.

The Importance of Prior Knowledge

Knowledge in all its forms whether declarative, factual information, or procedural (Runco and Chand 1995)) plays an important role in creative cognition. Eskin et al. (2018) support the idea that creative cognition may be influenced through the combination of existing ideas and existing knowledge. Knowledge as an important part of creative cognition is at times overlooked owing to the myth that creativity is somehow linked with a thunderbolt of inspiration. For example, Diakidoy and Phtiaka (2002) found that teachers did not link knowledge to creativity and therefore did not attribute its importance to the creative process. In many instances, past knowledge is used to generate new ideas. Ormerod and MacGregor

(2017) support this notion through their work exploring how transfer of knowledge is manifested in creative problem solving. Weisberg (1995) identified instances where subjects used information that was previously used in another situation and transferred it to a new context. This implies that existing knowledge is also important for combinatorial processes where old knowledge may lead to the creation of new concepts and new information (Simonton, 2022).

It is important to observe that knowledge is not used in isolation. In their mission to understand and enhance creative mental processes further, Finke et al. (1992) developed the creative cognition approach with the aim of understanding how human minds produce creative ideas. This approach supports the idea that knowledge may play a role in creativity. This can possibly take place through analogical or spontaneous transfer. Analogical transfer takes place when similarities between problems lead to the application of a solution previously used to a new problem. On the other hand, spontaneous transfer takes place when a source of information is considered relevant and applied without prompting. In this case, similarities are not compared or evaluated (Ormerod and MacGregor 2017).

Further work was carried out by Benedek and Fink (2019), who developed a neurocognitive framework of creative cognition explicating the roles of memory, attention, and cognitive control. The authors argue for the need to refine and further define the role of the functions that make up neurocognitive functions like memory, attention, and cognitive control. Focusing on the functions that make up creative cognition and using up-to-date evidence from research, the authors harnessed constructive memory processes which are involved in the building of new representations, directed attention which supports active imagination and the implementation of goal-directed memory and attention processes through executive control to formulate a new neurocognitive framework of creative cognition. These later developments in the theorizing of creative cognition remove the explicit focus that was typically placed on the generative and convergent aspects of creative processes and

shifted attention to the roles harnessed by memory, attention, and cognitive control that individuals engage with when thinking creatively.

Research on Creative Cognition

Various researchers have explored how the human brain works when engaged in creative activity. The use of existing knowledge and of conceptual notions in the process of creative cognition has been studied initially from a cognitive psychology perspective. A hallmark piece is the work by Ward (1994) who had asked students studying psychology to imagine life on other planets. The students were instructed to draw and describe a species of animal that might live on these planets. Most students produced illustrations that included eyes and limbs that offered a symmetric appearance. These outputs appear to be highly influenced by previous knowledge that the students had and perhaps assumptions that are made when asked to draw “animals”. In this and other similar studies, the different levels of abstraction have been used to differentiate between creative and non-creative cognition. Individuals who did not manifest cognitive flexibility, and who could not free themselves beyond the basic level of abstraction, for instance, offered non-creative cognitive outcomes by keeping to similar shapes and proportions in their illustrations.

More recently, using different research methods, Beaty et al. (2014) explored how the mind produces creative ideas. The researchers studied how executive and associative processes influence creative thinking. Their research found that increasing the semantic distance between verbal fluency responses and cues resulted in enhanced quality of divergent thinking. Previous research had mainly focused on either executive or associative processes related to creative cognition where associative processes involve the spontaneous emergence of creative ideas resulting from associative processes that take place in semantic memory, while executive processes coordinate and regulate the flow of information processing (Brown and Braver 2009).

The project by Beaty and his colleagues indicates that both processes may stimulate the generation of new ideas. In 2016, Beaty et al. published work detailing further research in the area. They found that during creative cognition and artistic performance, the default network which is linked to episodic memory retrieval, and executive control networks work well together. This may further support the claims by Finke and colleagues suggested above that combinatorial processes are involved in creative cognition.

Strategies to Enable Creative Cognition

Creative thinking or “the thinking cap effect” as Weinberger (2020) refers to it, involves the need to deliberately think in new ways to generate new ideas or elegant solutions. Boden (2004) claims that creative thinking can be made possible by constraints, an idea that is also supported by the Geneplore model where constraints are components in the generative, exploratory, and interpretive process. This may lead to the engagement with a dual process involving the generation of ideas and the convergence of the same ideas leading to a final outcome. A variety of frameworks have been proposed to facilitate creative thinking like TRIZ (Terninko 1998), and Creative Problem Solving 6.1™ (Isaksen et al. 2011) which are highly structured. Other methods involve the use of a series of creative thinking tools to formulate thinking sequences at will. The late Prof. Edward de Bono formulated a variety of frameworks that may facilitate creative thinking through the explicit use of thinking tools. The Six Thinking Hats, Power or Perception and Lateral Thinking methods are only a few of the variety of simple techniques that may lead to higher engagement with the creative process. Lateral thinking in particular is about “possibilities and what might be” (de Bono 1992: 89). Systematic techniques like random input may facilitate the generation of new ideas through the use of unconventional thinking methods. Typically, conceptual expansion is at the heart of these creative thinking methods by facilitating

the process to make new associations and exploring problems from different points of view (Abraham 2014). Through its phases, namely, the generation of preinventive structures and the preinventive exploration and interpretation phases of the Geneplore model, similarities on how new possibilities may be conceptualized emerge.

The Importance of Cognitive Flexibility

Abraham (2014) presents a graphic representation of a process involving different mental functions that are employed when practicing creative thinking. One shortcoming of this representation relates to the emphasis on the generative aspect of the process. Convergence does not seem to be included. Notwithstanding this, the simple concept presented by Abraham indirectly introduces the notion of perspective shifting, an all-important function in the practice of creative thinking.

Perspective shifting using both associative and executive processes leading to the production of creative ideas that are novel and useful are at the heart of creative thinking. Cognitive flexibility has been shown to lead creative ideas through originality. This happens when the individual is able to manipulate the information available when thinking creatively (Ritter et al. 2014). One may conclude that creative thinking requires both Type 1 and Type 2 thinking. Type 1 thinking involves automatic responses that happen in quick succession while Type 2 thinking requires more effort and time (Evans and Stanovich 2013). This section highlights the potential that creative thinking can offer to operationalize theoretical concepts like Pro-C, little -c, and mini-c of creativity (Kaufman and Beghetto 2009). The authors suggest microgenetic methods to explore the development of creative thinking. These methods may include observations and retrospective explanations offered by participants among others. In turn, this may present opportunities to ignite creative cognition making everyday creativity (Richards 2018) real.

To this effect, from a conceptual point of view, He (2017), proposed a model indicating the processing modes of intentional creative thinking. He uses imagery thinking and intuitive thinking as the base constructs. The model is presented in a circular structure with arrows pointing in both directions indicating an interdependence between the three elements logical thinking, imaginative thinking, and intuitive thinking.

Creative Cognition and the Possible

The possible. This notion invites us to aspire, to think ahead, fantasize, and wonder. Thinking beyond the “here and now” and engaging with the “not (yet) here” (Glăveanu 2021) gives us the opportunity to imagine our futures and plan strategies to achieve goals accordingly. The concept of the possible invites us to explore, to consider, or even to design options that we may not concretely believe are realistic. This stance allows for a certain freedom of thought that may be challenging yet rewarding.

Why is the possible challenging? Breaking free of old thinking patterns is difficult. Most individuals use a convergent thinking style often associated with fixed patterns of thought (Walton 2003). This notion alone calls for action to encourage engagement with generative practices. As noted above, humans typically use combinatorial efforts to engage in creative cognition leading to novel, elegant ideas that are also useful. This view on creativity may pose limitations to our outlook to the possible. The element of appropriateness (Sternberg and Lubart 1999) in the basic definition of creativity may lead to restrictions into how broadly one may think in terms of new ideas by imposing self-judgment. Boden (2004: 41) goes a step further by claiming that creative ideas need not only be useful but also “illuminating or challenging”. This stance could be a step in the creation of possibilities. Craft et al. (2013), refer to combinatorial play as a method to steer thinking in the direction of “what might be?”

Possibility Thinking (PT) originally established by Anna Craft symbolizes a process

of generative activity. Defining PT as “the transformation from what is to what might be” (Craft and Chappell 2016), Craft started the PT movement asking “what if?” using different scenarios. This mode of engaging cognitive processes leads to the shift from “what is this and what does it do? To what can I or we do with this?” (Craft et al. 2013). This mode of thinking is open and invites contributions to the formulation of potential scenarios emerging from “what if?” Although the origins of PT lie in research in educational contexts, the concepts may be transferred to other contexts with ease, thus creating opportunities for changing mindsets, encouraging a forward-looking outlook.

More potential ways engaging creative cognition with the possible may be sought in mind-wandering. Mind-wandering “refers to those moments in which our thoughts take us away from the here and now of immediate experience and action towards unrelated ideas, images and events” (Glăveanu 2020a:85). Studies show that humans engage in mind-wandering or daydreaming at regular intervals. It would be useful to harness the power of mind-wandering to spin-off new ideas that can help humanity solve various problems that effect society. Wu and Hao (2020) claim that researchers believe that mind wandering could enable creative cognition. Breakthroughs may be achieved when associations and ideas produced by mind wanderers are collated.

Achieving the Possible Through the Cultivation of Creative Thinking

In a recent publication, Glăveanu (2020b) comments about the potential abstract notions related to “the possible”. To cultivate the possible, he suggests that we are “aware of what is possible and its exploration”. (p. 53). Everyone has creative potential (Runco 2003), how we look at things is what can make a difference in how we might shape the future. New possibilities can emerge if creativity becomes an everyday activity (Richards 2018). To this end it is important for individuals to engage with creative processes in

order to possibly extract new possibilities from everyday discomforts or necessities that might lead the way for a better society. At this stage, mind-wandering consisting of self-generated thoughts that may not be related to anything in particular (Fox and Beaty 2019), can gain relevance since through such practice, we might engage with the possible. PT may also offer suitable opportunities to explore and design the future. These can be perceived as highly empowering practices as individuals who can think creatively may have a better chance at forging their own futures.

Moving away from theoretical concepts, we may note that a variety of techniques exist that may stimulate the design of what is possible as noted above. Through his work Prof Edward de Bono proposed simple techniques to guide the practice of a forward-looking stance. PO or rather Provocative Operation is one of a set of lateral thinking techniques that can be put to use to wander and actively think about the possible. This technique engages in a dual process through a generative stage that may then be converged. One prominent feature of this thinking method that links with the possible is “Wishful Thinking”. Individuals practicing the tool are invited to explore their wishful thinking in relation to specific topics that may be generated at will. It would be interesting and potentially very useful if empirical studies had to be carried out to assess the impact of PO and similar creative thinking methods.

Conclusion

Creativity involves breaking out of established patterns in order to look at things in a different way. (de Bono 1990)

Through this brief overview, creative cognition was explored through its historical conceptions and how these may be adapted to gain an outlook on the possible. This hopeful and dynamic concept may offer opportunities for academia and society at large to take charge and design the future by focusing on the “not yet” creating space to make it happen.

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Creative Development

Ross C. Anderson
University of Oregon, Eugene, OR, USA

Abstract

Creative development is the process of individual and collective growth in new, effective, and meaningful ideas, skills, thinking, and production. The creative growth of individuals can happen within a specific domain, like science, and also develop generally in skills and dispositions that are transferrable across domains. As a sociocultural process, creative development of one individual builds from and contributes to the creativity of others. Creative development across the life span relates to how a person adapts to the changing circumstances of life with agency, a resilient and growth-oriented attitude, and a sense of possibility for themselves and their world.

Keywords

Creativity · Development · Agency · Adolescence · Participatory

Introduction

Creative development is the process of individual and collective growth in new, effective, and meaningful ideas, skills, thinking, and production. The creative growth of individuals can happen within a specific domain, like science, and also develop generally in skills and dispositions that are transferrable across domains. As individuals take risks to contribute new ideas and solutions, they carry our collective potential for creative development further, often changing how we think about the world in profound ways. Therefore, it is optimal to conceptualize creative development through a number of approaches that relate to the possible – possible pasts, selves, worlds, and futures.

First, a multidimensional approach to an individual's creative resources creates an expansive set of possible *self* compositions that a person may bring to a task or challenge. Many of those resources are malleable with focused effort. Specific domains will draw on specific resources in different ways, and a person's possibilities for creative development will evolve with practice, developing the skill, strategy, and metacognition to enhance the process and output. Second, from a developmental perspective across key stages of human growth and the life span as a whole, there are domain-general creative resources that may be transferrable and adaptive to a range of contexts and domains. How a person reflects on themselves in the past as agents of their world and how they imagine themselves and the world they inhabit will play a role in their development. The possible identities explored in a lifetime converge in several meaningful ways with creative development. Third, from participatory, societal, and cultural perspectives on creativity, creative development does not occur within an individual. Rather, creative development is interactive between a creator and an audience and between the creator in the present and any

contributors to the evolution of that idea. Often, those breakthroughs and pronouncements aim at transformation in the world and an individual’s role in its reconstruction.

This entry links different perspectives on creative development to different dimensions of the possible with the aim of identifying potential pathways for future research, grounded in the possible as a field of inquiry (Glăveanu 2018). Throughout this entry, I will draw on a specific and key period of human development, adolescence, to help anchor the ideas presented. In light of the intense identity exploration underway during adolescence and its consequential nature for an individual’s later development, this period can provide insight into the links between creative development and the possible.

Creative Development Within Domains

An individual’s person-level creative resources include a variety of thinking skills, attitudinal orientations and beliefs, and behaviors (Lubart et al. 2013). Some of those resources, such as openness, imagination, and tolerance for ambiguity, are directly related to states that engage with the possible. Thinking about creative development as the composition and growth of creative resources provides a helpful multidimensional way of considering how an individual may approach a task or experience development in a domain. Though not exhaustive, Table 1 presents some general creative resources that research has identified as important to creative development and creative contributions. The debate about the domain generality and domain specificity of creativity (Baer 2015, 2016) has provided contrasting but complementary perspectives, reaching some consensus that specific creative resources are

necessary within domains and that general creative resources will support an individual’s creative development and contributions across domains.

For instance, Root-Bernstein (2003) documented the existence of polymathy, or creative achievement in multiple domains, to suggest a universality to the creative process of innovation and highlight the relationship between seemingly disparate fields, such as science and the arts. If we start at the narrowest framing of creative development, we can work to understand how the possible takes shape for an individual within a specific domain of activity, discipline, or pursuit and how that development can support the individual’s creative development and potential contributions, more generally. For example, an adolescent who has developed creative behaviors specific to guitar playing, such as routine practice, songwriting, and rhythm, will be more likely to experience greater creative development if they are more curious about the mood that different chords make when juxtaposed in a composition and more willing to take risks to play with possible, but unconventional combinations. That adolescent may be driven to find a possible musical, acoustic representation of a new complex emotional experience.

The development of creative resources within a domain can also support an individual’s healthy identity development – the discovery of possible selves is a key developmental task during adolescence. To make a commitment to a creative domain in life, such as learning an instrument and eventually joining a band, links creative development to healthy identity formation during this key stage (Barbot and Heuser 2017). Though commitment to a creative domain may seem self-limiting, in reality, those commitments are necessary to expand the possible contributions that the individual can make to the world. That deeper commitment also broadens their sense of

Creative Development, Table 1 Creative resources components

Creative behaviors	Creative thinking	Creative attitudes and beliefs
Skillful, committed, persevering, collaborative, experimental, embodied, adaptive ...	Curious, imaginative, divergent thinking, associative and metaphorical, integrative and synthesizing, mental flexibility, humorous ...	Openness, intrinsically driven, tolerance for ambiguity, boundary-breaking, growth mindset, risk-taking, self-efficacy ...

possibility and confidence to achieve an imagined future, such as playing live for an audience. The creative act of imagining a possible future for oneself, constructing a possible self, and working toward that self-actualization can itself be thought of as *life creativity* (Zittoun and de Saint-Laurent 2015).

Importantly, opportunities to engage in a creative commitment in life are not equitably available to people. The creative commitments that are possible for an individual, young or old, are embedded in and constrained by the individual's life course and historical time (Elder 1998). That life course of individuals is bound by the social, economic, and cultural factors at play that either open or close opportunities for creative exploration, development, innovation, and contributions. Certainly, a tension exists between the accessibility of opportunities for an individual and the agency of the individual to seek out, choose to act on, and pursue opportunities for creative development. For instance, research about creative polymaths illustrates how creative development in one domain, such as the arts, can feed insights and development in a completely distinct domain, such as science. Root-Bernstein (2003) provided the example of Santiago Ramon y Cajal, one of the first Nobel Prize winners in Physiology or Medicine, who attributed much of his renowned success in neuroanatomy to his avocations in photography and the visual arts. It is possible that Ramon y Cajal's choice to pursue his artistic development was just as important as his pursuits in science. In terms of creative development, though individuals may excel in a single domain, it is more often the case that their creative process develops, expands, and refines through activity in multiple domains, even if they don't reach the same levels of achievement across them.

General Creative Development Across the Life Span

Creative development across the life span relates to how a person adapts to the changing circumstances of life with a resilient, open, and growth-oriented attitude and with a sense of possibility

for themselves and their world (Carson and Runco 1999). A person's general creative development can be conceptualized as the emergence of strategic engagement of knowledge and creative resources related to the creative process. Using perspectives on lifelong learning, creative development can fit into a novice-to-expert continuum (Dreyfus and Dreyfus 1980), where individuals can be starting at the beginning stage of development, based on experience and exposure, not on years of life. From a developmental perspective, the general creative thinking process has been conceptualized with specific pieces: (a) problem finding and construction, (b) idea generation, (c) tolerance for ambiguity and risk-taking, (d) seeing failure as opportunity, and (e) being metacognitive about strengths, limitations, and strategy (Lench et al. 2015). An individual could be naturally gifted or developing at different rates and levels within each of those components of the creative process.

From that perspective, development to a point of expertise indicates a high level of both intuition and metacognitive capacities but should not be considered a static end – possibilities continue to abound because every context and domain requires different combinations of creative resources. In fact, the merging of disciplines and domains – a *transdisciplinary* perspective about the world – would mean that the possible “disciplines” to master are limitless. From a developmental stance, behaviors often begin by watching others, with ample exploration and trial and error, learning from setbacks and failures. With practice and deliberate investigation, learners reflect and develop the metacognition (Flavell 1979) about what works, when it works, and how to adapt it to new situations. Recent research suggests that creative metacognition plays a key role in how an individual will transform their creative potential into agentic and creative action (Anderson and Haney *in press*). As with any other set of knowledge, skills, and dispositions, becoming strategic with creative thinking, attitude, and behaviors depends on cumulative experiences in a variety of contexts as well as a mindset that with effort growth is possible, even when a challenge is quite difficult.

The developmental framework for creativity (Lench et al. 2015) places the most advanced level of creative development at a point of emerging expertise, suggesting the possibilities for how that high level of intuition, insight, and adaptability depend on a continued belief in one's potential to grow and adapt – expertise continues to be a means rather than an end.

Creative development as agentic. Recent research supports a model of creative behavior as agentic action, where the self-beliefs (e.g., creative self-efficacy) and values (e.g., nonconformity) that an individual carries into a task will dictate their creative effort, achievement, and development (Anderson and Haney *in press*; Karwowski and Beghetto 2018). Developmentally, if the individual has limited experience and knowledge in a task or domain, they may not feel a high agency to be creative in that task or domain unless they have been successful in something related. From a social cognitive perspective, a person's development in life is not just dependent on the level of their personal agency – their *proxy* agency is influenced by others and the environment around them (Bandura 1986, 2018). Whereas personal agency is made up of the prospective belief of success (or self-efficacy), the sense of control in the process, and the personal value of the endeavor, proxy agency includes the modeling and observations experienced vicariously through others. Theoretically, in one's creative development, these aspects of agency should matter enormously. Someone is unlikely to develop creatively if they lack the self-belief they can be successful and the value that it is worth their time and effort. They will also be limited without access and exposure to others who model that creative growth is possible and important. Agency in the risk-taking and openness that precludes creative development sets the stage for the possible. Without agency, the ideas of a possible creative self are unlikely to emerge, and sustained creative development toward that actualization remains *impossible*.

If individuals begin from a perspective that there are many possible organizations and reconstructions of the past, depending on one's perspective and framing of experiences, even (or

especially) personal histories of difficulty, challenge, and failure can be seen as empowering and agency-building. This sense of the possible emerging from reflections on the past can be a powerful mechanism to shift general beliefs about the potential for creative development. For instance, in a recent study, educators learned about the malleability and breadth of creative resources and completed hours of reflection and practice in basic creative thinking routines. Upon completing 28 h of training, teachers demonstrated very large decreases in their fixed mindset beliefs about creativity – the perception that creative capacity is trait-like and unchangeable in themselves and students (Anderson et al. 2020). Reflections on the possible in the past will influence the possible for one's creative development into the future. If past failure, for instance, is seen as diagnostic of one's limitations and hopelessness, then the risk-taking needed for creative growth will likely be limited. As early adolescent students have shared, when mistakes are seen as expressions of the unique interpretations of the individual (imagined possibilities), creative development has room to grow in the young person, especially in a social setting filled with judgment and pressure, both perceived and experienced (Anderson et al. 2019). The value placed on one's own potential for uniqueness and creative growth is deeply linked to the role of agency in what is perceived as possible in personal creative development.

Creative development in adolescence. To dig deeper into general creative development during a specific and important period of human growth, adolescence provides an opportune grounding. Research indicates that different fluctuations in creative development likely exist during the adolescent years (Barbot et al. 2016) – a period marked by highly dynamic biological and social growth (Dahl et al. 2018; Eccles and Roeser 2011). Healthy identity exploration and commitment are important and difficult developmental tasks during adolescence, and creative development can support that identity formation through at least three pathways (Barbot and Heuser 2017). Learners can solidify their identity through the creative commitments they make, such as joining

a band. Adolescent learners can use creative activities as opportunities for adaptive self-expression, such as jamming on the drums to express the common feeling of teenage angst. Creative thinking processes, including divergent idea production, may enhance the identity exploration and formation process by expanding what is perceived as possible and by being strategic about actualizing those possibilities in the present reality (Sica et al. 2017).

When looking at the development of one of the most ubiquitous domain-general skills studied in the creativity field during the tumultuous and consequential developmental period of early adolescence, this developmental approach comes into view. A recent study modeled the different groups of trajectories of divergent thinking originality that emerged from a sample of 1300 US middle school students from Grade 6 to Grade 8 (Anderson 2019). Across five measured time points, 72% of students demonstrated a low and declining development of originality. Among the other four groups, two rose and declined, one group showed no change, and a third group of 5% of the sample demonstrated consistent growth across the three pivotal early adolescent years of middle school. Compared to the normative downward trend of 72% of the sample, when the growth group began Grade 6, they showed higher levels of growth mindset about their abilities. In other words, they strongly believed in the possibility of their growth and development. Moreover, they valued social conformity less than the normative group, believing that being different than what others expected – holding firm to the possible in their own diversity – was more important than getting others to like them (Anderson 2019). Those two beliefs were key predictors of adaptive creative development, and that development contributed to students being more prepared for high school than most of their peers – higher academic, agentic, and creative outcomes at Grade 8.

Those findings resonate with other research, which indicate that a creative mindset is key to creative development (see entry on ► “Creative Mindsets”; Karwowski 2014), and unconventionality of a person has a strong link to their capacity for original ideas (Andreas et al. 2016). Put

another way, two ingredients appear to be key: (a) the willingness to make mistakes and, possibly (or likely), fail and interpret that failure as latent with growth potential and (b) the commitment to follow one’s own path, instinct, and unique expression, even when it may be unconventional in the face of others’ expectations. It is likely these strengths require just as much proxy agency as personal agency to develop in a context like school.

Though more research is needed about the conditions that support creative growth during adolescence and beyond, evidence of declines have prompted a range of explanations. Documented downward trends of divergent thinking during adolescence may be an interaction between the neurological, physiological, and social development underway, the opportunities provided in the environment, and the task used in measurement (Barbot et al. 2016). Explanations for an apparent Grade 4 slump appear through sociocultural perspectives, including (a) the effects of critical grade-to-grade transitions in school (He and Wong 2015), (b) normative effects of more strict classroom environments (Torrance 1968), (c) cultural differences, such as early emphasis on college entrance exams in China (Yi et al. 2013), and (d) socioeconomic characteristics of the students’ school and the different educational experiences those characteristics afford (Dai et al. 2012). Explanations also appear through affective and cognitive perspectives. Temporal gaps in socioemotional and cognitive control systems during adolescent development could explain different slumps in creative ideation development (Barbot and Hunter 2012). A common theme across those explanations is that they focus on the environmental and sociocultural conditions and biological growth underway. However, as articulated earlier, an alternative perspective that has begun to gain traction focuses on the social cognitive theory framing of agency, where the social, cognitive, and affective experience of self-belief – related to imagined possible selves – interact with opportunities provided in the environment. Though adolescence is unique as a developmental stage, because it sets up patterns and identity beliefs into adulthood, the

research and theory discussed here likely plays a role in creative development later in life.

Participatory and Societal Creative Development

Up to this point, this entry has focused on how the individual experiences creative development within a specific domain or, more generally, in their potential for creative thinking and behaviors. However, more recent work has begun to shift the gaze of creativity research from the individual in isolation toward the individual engaged with others and the world around them. These ideas relate to how we imagine our interactions with others and the environment in the possible worlds and futures – the social and cultural landscape of myths (Castoriadis 1987) that dictate our experiences and which we can each play a role in shaping (Glăveanu 2018). Clapp (2016) drew our attention to the evolution of an idea, in our collective development, and away from the supposed lone creator, who likely receives recognition, and sometimes fame, for having discovered and pursued the idea to the point of expression valued most societally and culturally. Often, deeply embedded collaborators may receive much less acknowledgment than the individual at the head of the idea (Glăveanu 2011). A postmortem dissection of an idea or discovery to understand the many contributing minds that produced the idea rarely happens; however, some research has looked at how an idea evolves in interdisciplinary groups, proposing a six phase process, each phase a *room for opportunity* of the possible (Ness and Søreide 2014). For instance, Ness and Søreide (2014) found that the third phase, called *polyphony*, included effort to understand and blend diverse perspectives from the different disciplines within a group, producing friction and an opening to new possibilities and learning.

The process of theatrical improvisation provides another snapshot of the collaborative process in a creative endeavor. Launched by a “golden premise,” individuals build off of an idea in the moment, using intuition, possibility thinking, and random acts, to sculpt something

new together. An improvisational piece is made up of a rapid succession of interpretations and contributions that are unique to each individual. Though often drawn out over years or generations, the passing of an idea through unique individuals, until it evolves into something demonstrably creative, is a participatory and co-generative process. If creativity is really about the evolution and passage of an idea through a cultural milieu from one person or one group to another, then creative development should not be thought of so intensely in isolation of the individual. Such a narrowing limits the possible in terms of our conception of creative development – both how we study and pursue it.

Creative development societally often begins with disruption and possibly a paradigm shift (Kuhn 1962). That revolution can happen through multiple pathways, including scientific discovery, irrational enthusiasm, disaster, or social and cultural movements, for instance. Creative development of individuals and a group, as a whole, can occur through greater means for exchange of ideas and information and cross-disciplinary collaboration (Ness and Søreide 2014). Technological advances have created a participatory culture online, where anyone with a connected device can create and contribute new content. These advances may be advantageous for one specific pathway for social and cultural creative development – specifically, the creative and artistic activism, or *artivism* (see entries on ► “[Social Change](#)”), of an individual or group aimed at shifting perception and consciousness about issues in the world around them (Glăveanu 2017).

Distinguished by the element of surprise, novelty, and potency, artistic and creative activism can seed new ideas about the world in the audience and boost the sense of possibility and purpose for the creator(s), emboldening individuals or groups with the possibility of liberation from oppressive or dominating views or conditions. When individuals or groups take creative risks (often these risks can include the risk of arrest or more), those examples are experienced vicariously by others and can boost the sense of agency in others within their own creative development and contributions. These constructed moments

can shift individual or collective views about the ingrained myths of social and political institutions, thereby releasing minds into the possibility of different worlds and futures. This socially and culturally engaged perspective on creative development expands conceptions of creative development as a phenomenon experienced in isolation by individuals into realms of interdependency, participation, and possibility.

Conclusion

Creative development and the possible are inextricably linked. At the individual and personal levels, a sense of agency and belief in growth undergirds what can be imagined in our own unique creative development. That sense of agency can act reciprocally in the collective with others by establishing new narratives about what is possible and how to seek out and actualize those possible selves, worlds, and futures in the current lives we lead.

Cross-References

- [Creative Mindsets](#)
- [Empowerment](#)
- [Social Change](#)

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Creative Inconclusiveness

Giovanni Emanuele Corazza

DEI-Marconi Institute for Creativity, University of Bologna, Bologna, Italy

LaPEA, Université de Paris and Univ Gustave Eiffel, Boulogne-Billancourt, France

Abstract

Creative inconclusiveness is a state of uncertainty in a creative process, one in which multiple possibilities are still open for exploration. Inconclusiveness is not an accident, rather it is a fundamental part of the creativity phenomenon that is not captured by the standard definition of creativity, but that is covered by the dynamic definition of creativity, within the theoretical dynamic creativity framework. Creativity requires going beyond the boundaries of existing knowledge to explore untested possibilities, irrespective of the fact that in doing so one might or might not be awarded a creative achievement. Intrinsic and extrinsic causes for creative inconclusiveness are discussed, as well as the conceptual extension of inconclusiveness, uncertainty, and possibility to the dynamic universal creativity process. It is shown how the response of the creative actor (s) to states of creative inconclusiveness is crucial, with highly creative individuals able to extract positive energy from the ensuing

frustration, whereas those with low creativity abandon. Six eminent examples of geniuses who experienced very significant inconclusiveness are discussed: Edison, Marconi, Jobs, Lamarck, Van Gogh, and Leonardo. Indications for future research activities on the subject of creative inconclusiveness are provided.

Keywords

Creativity · Creative inconclusiveness · Dynamic creativity framework · Dynamic definition of creativity · Dynamic universal creativity process

Definition of Creative Inconclusiveness

By definition, conclusive evidence is interpreted as a definitive and certain result that leads an action to an end. The emergence of conclusive evidence therefore justifies the termination of a process, closing any further possibility, eliciting what can be identified as a state of conclusiveness. Conversely, inconclusiveness is a state or condition which is the antonym of conclusive: a state of uncertainty, where an indefinite number of possibilities are still open; a state which is indeterminate, not final; and a state in which the obtained results are yet far from being satisfactory, or in need of refinement. In a state of inconclusiveness, there is no *a priori* justification for terminating a process other than the fact that available resources and/or the motivation for pursuing the original objectives might have been exhausted, or directed to other objectives. A state of inconclusiveness will place a stress on the person, organization, or system that is experiencing it, and the response to the feelings of frustration, confusion, and indeterminacy associated to this state is critical in determining the lifetime track record of the involved actors.

In line with the above general discussion, the specific concept of *creative inconclusiveness* is defined as a state of uncertainty in a creative process. Creative inconclusiveness is not an accident: given the fact that the outcomes of a creative process are *a priori* unknown (otherwise they would not be creative), uncertainty permeates

most of the creative experience. A state of creative inconclusiveness can have intrinsic causes: the creative actor(s) might not: know how to precisely define the area of focus for the creative process; have sufficient motivation to invest in the creative process; have sufficient competence or information about the domain of knowledge that is relevant to the creative process; be able to generate creative ideas and produce outcomes; be able to extract the value of the produced outcomes; and have sufficient resources to bring the ideas to a tangible prototype or implementation. On the other hand, a state of creative inconclusiveness can have causes that are extrinsic, coming from the sociocultural environment within which the creative process is embedded: the proposal for a creative process might be rejected; the necessary resources for carrying out the process might be denied or insufficient; the creative process might be stifled by the extant culture or conceptual climate; the value of the creative products might be denied or insufficiently recognized by the gatekeepers; the creative products might be altogether rejected; the market might not be ready for the creative products; competing outcomes might be successful and thus obscure the value of the obtained results; and the resources necessary for the implementation of the creative products might be denied. Table 1 recaps several intrinsic and extrinsic causes for creative inconclusiveness. In general, the higher the level of ambition of a challenge, the higher the possibility to remain for long times in states of creative inconclusiveness. The ability to survive and emerge out of this state is a key requirement for creative achievement, as detailed below.

Creative Inconclusiveness in the Dynamic Creativity Framework

According to the standard definition of creativity as identified by Runco and Jaeger (2012), *creativity requires both originality and effectiveness*. In this form, the definition can apply to a product, a person, a process, or an environment. Originality is sometimes replaced by novelty (even though an original work is not only novel but also surprising

and authentic), while effectiveness is sometimes equivalently replaced by usefulness or appropriateness. Effectiveness is domain specific: it can refer to aesthetics in the arts, elegance, and power of explanation in science, performance in engineering, and so on. In this standard definition, the question of how originality and effectiveness are assessed is left implicit. This can be made more explicit by referring to the definition by Stein (1953, p. 311), who stated that “*The creative work is a novel work that is accepted as tenable or useful or satisfying by a group in some point in time.*” This definition, which is clearly oriented towards defining a creative product, clarifies the fact that the assessment of the originality, novelty, effectiveness, and usefulness is not an objective fact but rather a subjective process that depends on the actors involved at a certain time, in a specific sociocultural milieu. Both of these definitions are associated to a *static* framework for creativity studies, one that focuses primarily on instances of *creative achievement*, a state in which the creative actor(s) or the environment or both positively recognize the emergence of a creative outcome. Indeed, the standard definition of creativity, and all those definitions that similarly concentrate on the definition of a state of success, only covers the instances of creative achievement, and leaves out inconclusiveness as if this state were not worthy of being considered “creative.” In particular, if and when the outcomes of a creative process are rejected by society, under the static framework the creative process would *fail*. This is an important problem as it creates a gap in the theoretical framework: indeed, most of the reality of the creative process occurs actually within the boundaries of creative inconclusiveness.

Vice versa, when a *dynamic* theoretical framework is adopted for creativity studies, creative inconclusiveness becomes an essential concept, indeed a cornerstone. The dynamic creativity framework descends in turn from the dynamic definition of creativity (Corazza 2016) which foresees that *creativity requires a potential for originality and effectiveness*. The key difference resides in a single word: potential. The potential of a creative actor, process, or environment might be

Creative Inconclusiveness, Table 1 Intrinsic and extrinsic sources of creative inconclusiveness

Creative inconclusiveness	
Intrinsic causes	Extrinsic causes
Creative actor(s) has: • Insufficient focus • Insufficient motivation • Insufficient information • Difficulty in generating ideas • Difficulty in seeing the value of ideas • Insufficient resources for idea prototyping or implementation	Embedding environment: • Rejects proposal for creative process • Denies necessary resources to carry out project or to implement outcomes • Depresses motivation of actors • Stifles creative culture or climate • Denies value of creative products • Values more competing products

latent. When the potential associated to the outcomes of a process is recognized, an instance of creative achievement occurs. On the other hand, when any of the elements listed in Table 1 impede the recognition of the potential for originality and effectiveness, then a state of creative inconclusiveness is instantiated in the course of a creative process, even if the potential for originality and effectiveness is extremely high. The concept of potential allows the possibility for the same product to be considered very creative, moderately creative, or noncreative by different people, in different times or cultures. For this reason, in the dynamic creativity framework the word “assessment” is often substituted by “estimation.” Given that the distinction between achievement and inconclusiveness will never be so sharp as a black or white dichotomy, the dynamic definition of creativity is able to cover the entire scale of grey nuances between the extreme cases of total failure and eminent creative success, corresponding to very low (or theoretical zero) to very high (or a theoretical maximum) originality and effectiveness, and knowing that any judgment can change over time and culture. In other words, within the dynamic theoretical framework the *entire* process is considered to be creative, as long as it challenges the state of the art in order to have a potential for originality and effectiveness,

and this allows to consider creative inconclusiveness as pertaining properly to the realm of creativity studies. What characterizes core creativity in an epistemological sense is the fact of going beyond the boundaries of existing knowledge, exploring untested possibilities, irrespective of the fact that in doing so one might or might not be awarded a creative achievement. Given the fact that the state of creative inconclusiveness corresponds to uncertainty, open alternatives, indetermination, unfinished processes, and unexplored possibilities, it should be clear that the adoption of the dynamic creativity framework is essential in order for the creativity construct to be part of an encyclopedia of the possible.

Challenging the state of the art and exploring new possibilities is not only a prerogative of the human species. All other forms of life in flora and fauna evolve, and the entire universe evolves and expands. The search for new possibilities can therefore be seen at cosmological level. All of these phenomena can be seen in a unifying theoretical framework identified as the dynamic universal creativity process (DUCP), introduced in Corazza (2019), defined as the active ensemble of all creativity episodes in the history of our cosmos. Different layers of complexity at the material layer, biological layer, and socio-psychological layer can be shown to be interconnected through creativity episodes, the consequences of which extend indefinitely into the future. Indeed, creativity episodes can never be considered to be terminated in any hard sense, even in the presence of some form of creative achievement. For any given creativity episode, it is always possible to indefinitely continue a process of refinement of creative outcomes, irrespective of the response one receives from the environment. For any given product, the process of dynamic creativity estimation has no predetermined end, and by recognizing today a new form of value for an episode that occurred in the past, we effectively have an impact on the past itself. In other words, the creative process represented by the DUCP transcends the specific actors and extends indefinitely over time: inconclusiveness opens all possibilities for further exploration.

Creative Inconclusiveness: A Curse or a Blessing?

After the short DUCP digression presented above, we return here to the socio-psychological perspective, focusing on the modern era of the human society. It should be evident that it is natural for humans to expect some form of creative achievement out of their efforts. The minimum level is that of personal satisfaction in a process of personal growth, a situation that Kaufman and Beghetto (2009) identify as a form of mini-c creative achievement. However, when one is striving for higher forms of recognition at professional or eminent level (Pro-C and Big-C creativity in the terminology of Kaufman and Beghetto 2009), personal satisfaction becomes insufficient and might leave room to frustration when any of the extrinsic causes for creative inconclusiveness listed in Table 1 occur.

The fundamental question is whether an extant state of creative inconclusiveness brings only negative consequences, or if it can be considered to be potentially beneficial in the longer term. The answer to this question depends fundamentally to personal characteristics of the actor(s) involved in the creative process. In a study by Agnoli et al. (2019), an experiment was conducted in order to measure the effects of a manipulation on the feedback offered to the participants in response to their declination of alternative uses of common objects, in a classic alternative uses test (AUT; Guilford 1967). While the participants to this experiment were told that the computer had the ability to interpret natural language in real time and measure the creativity of the responses by exploiting a vast archive, in reality the system was repeatedly producing two predetermined manipulations: in the negative feedback condition, participants constantly received the same feedback: "The creativity of your responses is low" and in the positive feedback condition, participants constantly received the following feedback: "The creativity of your responses is high." The emotional intelligence trait (Trait EI) of the participants was measured through the TEIQue-SF scale (Petrides 2009), in order to have information on their ability to manage their emotional response. Finally, the

originality of the responses given by the participants was measured a posteriori by external judges. The results of this experiment are revealing. Under the negative feedback condition, which is clearly a proxy of the extrinsic causes of creative inconclusiveness, the low-trait EI participants showed a decrease in their creative performance, exposing a tendency to “give up.” On the other hand, in the same artificial condition of creative inconclusiveness, high-trait EI participants showed a progressive increase of originality of their responses. In other words, they were able to turn the negative energy of the frustration they were experiencing into a positive force for the production of more and more creative outcomes (Agnoli et al. 2019). This persistence and ability to turn the negative experiences of creative inconclusiveness into an incentive for further investment is a key characteristic of essentially all of the great minds that we consider as geniuses. A few eminent examples are reported in the next section.

Eminent Cases of Creative Inconclusiveness

The following examples of Thomas Alva Edison, Guglielmo Marconi, Steve Jobs, Jean-Baptiste Lamarck, Vincent Van Gogh, and Leonardo da Vinci are eminent because of their acclaimed creative achievements as geniuses; but an inner analysis of their biographies reveals that they were also champions of living through prolonged conditions of creative inconclusiveness. So much so that, at least in the cases of Van Gogh and Lamarck, creative achievement was only posthumous.

Thomas Alva Edison is certainly one of the greatest inventors of all times, who in the course of his lifetime was awarded thousands of patents. Edison, living the exciting epoch of the rise of electricity and electromagnetism at the turn of the twentieth century, was exceptional in his vision of possible applications of these physical phenomena. Edison did not work alone, he led a team of engineers and technicians whom he drove through a very intense program of try and error, building

and testing large numbers of alternative solutions. Clearly, most of the tried alternatives did not lead to successful outcomes, and thus generated waves of frustration in Edison’s team, but his leadership was masterfully expressed in his ability to picture these moments as useful instances of creative inconclusiveness (Wills 2007, p. 383): *“I never allow myself to become discouraged under any circumstances. I recall that after we had conducted thousands of experiments on a certain project without solving the problem, one of my associates [...] expressed discouragement and disgust over our having failed ‘to find out anything’. I cheerily assured him that we had learned something. For we had learned for a certainty that the thing couldn’t be done that way, and that we would have to try some other way. We sometimes learn a lot from our failures if we have put into the effort the best thought and work we are capable of.”* Edison’s lesson is very clear: the information that can be gathered in a state of creative inconclusiveness has fundamental value when one is exploring virgin grounds; it serves as a guiding light, without which it is very unlikely that anything useful can be found.

Around the same epoch, Guglielmo Marconi was working on his invention of wireless telegraphy, the development of which was a continuous refinement and development of the initial idea in a quest to reach longer and longer connection distances. In this sense, Marconi’s example is paradigmatic to show the indefinite duration of a creativity episode: refinement can continue indefinitely, irrespective of the fact that one has already obtained some (large or small) creative achievements, as long as one has the resources and the willingness to continue to pursue one’s objectives. In 1901, Marconi set out to perform his boldest experiment ever: the crossing of the Atlantic Ocean, from Cornwall in England to Newfoundland in Canada. Extrinsic causes of creative inconclusiveness worked very strongly against this idea: the physicists of the epoch, not knowing about the existence of the ionosphere (which of course Marconi was not aware of, as well), proved mathematically that this experiment was impossible. Marconi, 27 years old at the time, resisted all this negative criticism and overcame the harsh

environmental difficulties (the first transmission was received in Canada on December 12, 1901), before he could declare success. But this was not enough: the outside world still did not believe him, the press implied a fraud: Marconi's answer was to start a commercial service for transatlantic communications, definitely proving the truth of his creative achievement.

Taking an example from modern times, Steve Jobs is certainly remembered as one of the most impactful innovators in the information society, with planetary successes such as the iPod, the iPhone, and the iPad. However, the list of products conceived by Jobs that failed on the market or never made it to the market is probably even longer. Citing a few examples: the Apple Lisa, Macintosh TV, the Apple III, and the Powermac g4 cube. It should be underlined that often times the principles contained in a product that failed was then utilized by Steve Jobs, in whole or in part, in another product that became a success. In other words, in order to really analyze and understand the overall creative career of Steve Jobs, and extract from it useful lessons for future entrepreneurs in the high-tech sector, it is necessary to consider not only his creative achievements but also, and perhaps more importantly, his states of creative inconclusiveness and how these led to success through a path of reinvention and risk-taking.

The botanist Jean-Baptiste Lamarck was one of the first to formulate a complete framework for biological evolution, which in his view was based on two fundamental laws. The first law of *use and disuse* foresaw that during the course of the development of an organism, a more frequent use of an organ tends to consolidate it and make it stronger, while its permanent disuse progressively weakens it, reducing its functional capacity possibly down to zero. Lamarck's second law of *inheritance of acquired characteristics* established that the modifications to living organisms in terms of acquisition and losses of functionalities and characteristics as determined by the first law can be inherited, provided that they are common to both sexes. Lamarck's theories soon fell into a disgraceful state of creative inconclusiveness due to the contemporaneous rise of the Darwin's theory

on the *Origin of Species* (1859), establishing that inheritance is fundamentally based on genetics and not on the influence of the experience. For more than a century, this seemed to be the end for Lamarck's ideas. However, dynamic changes are presently happening in the study of the biological layer of the DUCP, and new findings in epigenetics today point to the fact that it is an actual possibility that Lamarck's theories could be at least partially correct (Wang et al. 2017): indeed, even though experience cannot modify one's DNA, it can modify the phylogenetic expression of DNA, in ways that can be memorized and transferred across generations. Creative achievement is therefore finally starting to dawn on Lamarck, after a long-time lingering in inconclusiveness.

Turning our attention to the world of the arts, there is general agreement about the fact that Vincent Van Gogh's production is one of the most creative of all times, joining a unique mastery of color, brushing technique, and imagination. Van Gogh started late as a painter, having tried other options in life which never led him to any form of happiness, but was then very prolific, producing hundreds and hundreds of works. Unfortunately, throughout all of his lifetime, he practically never met with creative achievement: he only sold a single painting in his life. He was probably the hardest critic of his own work, and his ability to obtain what would be posthumously considered to be marvelous technique only came through excruciating efforts, as, for example, he himself described in a letter to his brother Theo (Brower 1999, p. 686): "*I also worked on a large [figure] and have scraped it off twice, which you perhaps would have thought too rash if you had seen the effect; but it was not impatience, it was because I feel I can do better by grinding and trying, and I absolutely want to succeed in doing better, however much time, however much trouble it may cost.*" The success of Vincent Van Gogh was made possible only posthumously, also thanks to the determination of Johanna Bongers, wife of Theo Van Gogh, who published their letters and organized expositions of Vincent's paintings. She was fiercely criticized for this, but was able to persist and finally ensure perennial creative achievement for the artist.

Finally, let's consider Leonardo da Vinci, arguably the greatest creative mind of all times, who in the course of his lifetime generated ideas in more than 20 different disciplines, spanning the domains of the arts, science, and engineering. Leonardo's list of addressed disciplines includes painting, drawing, sculpture, anatomy, optometry, optics, botany, geology, geometry, aerospace engineering, mechanical engineering, hydraulic engineering, robotics engineering, military engineering, civil engineering, architecture, and city planning. As a consequence, Leonardo spent the larger part of his life dealing with multiple works in parallel, addressing different issues and finding cross-disciplinary associations. Leonardo produced the most famous painting in the world ("La Gioconda"), the most famous fresco ("Il Cenacolo"), and the most famous drawing ("L'Uomo Vitruviano"); he opened up anatomy, botany, and other fields of science and produced literally hundreds of engineering inventions. It should not come as a surprise that many of his operas remained unfinished. In this sense, Leonardo can be considered to have been not only the greatest creative achiever but also the greatest master of creative inconclusiveness.

Let's see some significant examples: when living in Florence, in the early part of his career, Leonardo was commissioned the "Battaglia di Anghiari" fresco for the Sala dei Cinquecento inside Palazzo Vecchio. Stifled by some technical difficulties, Leonardo did not finish the work in time, and for this reason he was not selected to be part of the florentinian delegation to the Vatican, and missed his chance to paint the Sistine Chapel. Out of this frustration, Leonardo decided to move to Milan and work at the service of Ludovico Sforza. There he designed and planned a gigantic equestrian statue for Ludovico's father, Francesco Sforza, which never saw the light because the necessary quantity of bronze was diverted from this project and used to produce cannons against the French invaders. In Milan he experimented with new fresco techniques for "Il Cenacolo" with a slower fix, which allowed him to work in parallel on several other projects, but these were revealed to be inferior to existing alternatives. A very long list of Leonardo's inventions remained

on paper at his time, and only saw the light several hundreds of years later. A few examples: the tank, the helicopter, the scuba diving equipment, and the contact lenses. In summary, Leonardo has been an unrivaled polymath whose mind was centuries in advance of his contemporaries, who really did not have the necessary knowledge in order to appreciate his production in all its value. Leonardo must have lived throughout his life in the frustration of creative inconclusiveness, unable to find anyone who could really estimate the extremely high potential for originality and effectiveness of his ideas, but this fact did not stop him or reduce his motivation at all.

Creative Inconclusiveness: Possibilities for Research

It would be a curious form of paradox to state that knowledge about creative inconclusiveness is concluded with this entry. In fact, given that most of the attention in creativity studies has traditionally been devoted to creative achievement, much remains to be explored in terms of the phenomena that characterize states of creative inconclusiveness in individuals, in groups, in organizations, and in societies. At the level of the individual engaged in a creative process, creative inconclusiveness should be studied in relation to its neural correlates, cognitive components, and emotional and motivational components. In groups, elements of positive teamwork and leadership should be studied in correspondence to the dire straits that characterize creative inconclusiveness. This holds as well for organizations, with the very important case of companies, both of large and small size. Finally, social and sociocultural environments differ greatly in terms of the climate that they create around the instances of creative inconclusiveness. A hypothesis worth exploring is that creativity and innovation flourish in those sociocultural milieus that afford risk-taking, in appreciation of the benefits of learning the lessons that creative inconclusiveness can teach and of the avenues that it opens towards the unexplored possible.

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Creative Learning

Ronald A. Beghetto

Mary Lou Fulton Teachers College, Arizona State University, Tempe, Arizona, USA

Abstract

Creative learning serves as a vehicle for the possible. Creative learning moves people from what is currently known to new ways of thinking and acting. More specifically, creative

learning refers to a process that results in new and personally meaningful understandings for oneself and others. The purpose of this entry is to provide an overview of the theoretical concept of creative learning and its posited relationship to the possible. Research and theoretical implications are also discussed.

Keywords

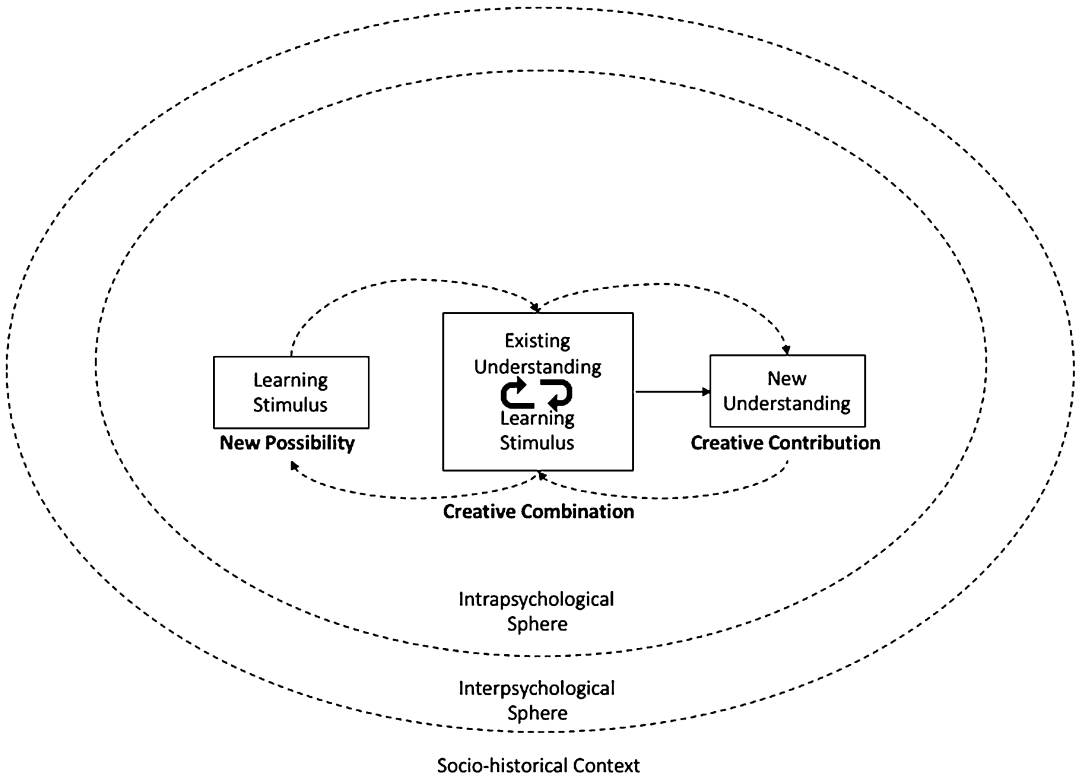
Creativity · Learning · Education · Creative learning · New possibilities · Creative contributions

Definition and History

Researchers have conceptualized creative learning in a variety of ways (see Beghetto 2016). Some have focused on the creative aspects inherent in learning (Guilford 1950; Sawyer 2012). Others have emphasized the learning that results in creative outcomes (Wyse and Spendlove 2007). Still others have taken a more encompassing focus, which has outlined the conditions, contexts, curricula, and factors that might be classified under the heading of creative learning (Sefton-Green et al. 2011).

Although there are differences in the emphasis of these conceptualizations, the concept represents a synthesis of creativity and learning. Creativity typically refers to that which has been judged as original and useful in a particular sociocultural and historical context (Plucker et al. 2004; Runco and Jaeger 2012). Learning typically refers to a process that results in a relatively stable change in a person or persons (Alexander et al. 2009). Creative learning has been defined as a “combination of intrapsychological and interpsychological processes that result in new and personally meaningful understandings for oneself and others” (Beghetto 2016).

When considering these definitions together, the overlap between creative learning and the two concepts it emerged from is quite clear. Moreover, the connection to the possible is also suggested in this definition, because creative learning results in the possibility of new and meaningful understandings. Creative learning, however, differs from broader conceptions of creativity and learning in several important ways. Specifically, creative learning



Creative Learning, Fig. 1 Core components of creative learning

represents a special case of creativity, which is constrained by an educational focus. Researchers interested in the concept of creative learning are concerned with the genesis of new understanding in the context of educational settings broadly defined. Moreover, creative learning also focuses on the creative contributions to one's own and others' understandings, which emerge from the combination of new learning stimuli and existing knowledge and experiences. In this way, creative learning represents a more epistemologically and educationally focused aspect of the broader concept of creativity.

Creative learning also represents a special case of learning. Creative learning is concerned with the personal and sociocultural processes that result in creative contributions to one's own understanding and the understanding of others. This emphasis goes beyond reinforcing, matching, or reproducing existing understandings and toward the development of new and possible

understandings (Beghetto and Schuh [in press](#)). These new and possible understandings can be reflected in ideational, behavioral, or material artifacts and can be judged to be creative contributions by oneself or others.¹ In this way, creative learning focuses on the combinatorial and emergent aspects of learning, which represent key characteristics of creativity (Sawyer [2012](#)). Figure 1 highlights the key features of creative learning (based on a previously introduced model of creative learning, see Beghetto [2016](#)).

¹I want to thank the editor of the encyclopedia for requesting clarification on whether creative learning is limited to mini-c creativity. It is important to stress that although creative learning may often be experienced at a more subjective and ideational level (e.g., mini-c creativity, Beghetto and Kaufman [2007](#)), it is also possible that the outcomes of creative learning can be represented in behavioral and material artifacts, which can be recognized by others as creative contributions (e.g., little-c or larger-c creativity, Kaufman and Beghetto [2009](#)).

The model of creative learning depicted in Fig. 1 posits that the process starts with an encounter with a learning stimulus, which serves as a *new possibility* for engaging in creative sense-making. This encounter can prompt a *creative combination* between the new possibility and existing understanding that, in turn, results in a *creative contribution* in the form of a new understanding. The model also posits that these core components can simultaneously operate in and between people in educational settings. As will be discussed in the following sections, although the same components are at play in and between people, they take-on different features at the intrapsychological and interpsychological level. Prior to discussing how these components play out differently at each level, it is important to highlight a few core assumptions illustrated in Fig. 1.

First, is the recognition that although there is a sequence or process for how these components operate (from left to right), the model is recursive. Similar to other models of creative thinking (Runco 2018), the recursive aspect of this creative learning model occurs both in the potential movement back and forth between components as well as iterative cycles throughout the model. Moreover, the intrapsychological (individual) and interpsychological (social) spheres represent permeable boundaries that are always and already interconnected and mutually influencing as denoted by dotted lines. Specifically, the sociocultural context continually influences students' learning trajectories and idiosyncratic understanding of academic subject matter (Schuh 2017). Similarly, individual students also impact and give shape to their sociocultural context; this can be seen in cases where students' unique perspectives are encouraged and considered by teachers and peers (Beghetto and Schuh *in press*; Gajda et al. 2017).

The permeable and embedded boundaries drawn between the individual and social in Fig. 1 highlight how the same components can operate differently at each level, while still recognizing that the individual is always influenced by the sociocultural and the sociocultural is always influenced by the individual.² Moreover, as is the case with how other creative processes have

been conceptualized, the creative learning model depicted in Fig. 1 acknowledges that the entire process is also influenced by sociohistorical and broader contextual factors (Glăveanu 2015).

Finally, the components and processes represent theoretical assertions, not prescriptions. Researchers can draw on these assertions to design studies aimed at empirically testing the posited processes represented in the model. The following sections briefly outline the key assertions associated with the core elements of creative learning at the intrapsychological (personal) and Interpsychological (sociocultural) level. The entry closes with a brief discussion of how the model connects to the possible and directions for research.

Components of Creative Learning

Intrapsychological Sphere

The interpsychological sphere of creative learning posits that personally meaningful understanding results from an encounter with a new learning stimulus, which is then meaningfully combined with one's existing understanding. Specifically, in the context of formal education, students are introduced to academic subject matter, which serves as a potential stimulus for creative learning. Learning stimuli can come in many forms, such as ideas, concepts, images, materials, and experiences. Regardless of the form that learning stimuli take, they represent a new possibility for transforming one's existing knowledge and experiences into a new and personally meaningful understanding (Beghetto and Schuh *in press*).

The model posits that students must find the learning stimulus optimally novel to catch their attention (Beghetto 2016), otherwise it may be dismissed as already known (not sufficiently

²It can be argued from a sociocultural perspective that the socio-cultural does not simply influence individuals from the "outside," but rather that the socio-cultural is interdependent with and co-constitutive of the creative learning process. I want to again thank the editor of the encyclopedia for noting this important sociocultural distinction.

novel) or too discrepant (overly novel). This determination is based on a student's prior learning trajectory, which includes student's prior knowledge and idiosyncratic experiences (Schuh 2017).

If a learning stimulus is sufficiently novel, then this new possibility is considered in light of what the student already knows. Put simply, this process refers to a combinatorial, sensemaking process that can result in a new, emergent understanding resulting from the combination of what *is* known with the newly encountered possibility. This generative and combinatorial process aligns with what researchers have long recognized as central to creative endeavors (Rothenberg 2015; Ward and Kolomyts 2010).

More specifically, it involves engaging the creative imagination to envision new insights, which can move students beyond their existing understandings and toward new learning (Beghetto and Schuh *in press*; Vygotsky 2004). Doing so opens up a broad horizon of possible understandings. Although the potential understandings that can be generated from this process are constrained by a student's prior learning trajectory, the resulting understanding (like all creative outcomes) is difficult to predict at the outset due to its emergent and dynamic nature (Sawyer 2012).

Consequently, there are various possible outcomes of this individual combinatorial process. In some cases, students may not be able to reconcile a newly encountered learning stimulus with what they already know. In such cases, they may choose to ignore the new possibility or seek out assistance. In other cases, the combinatorial process may result in the reinforcement of what is already known, rather than the development of a new understanding. This type of reinforcement or Piagetian assimilation of information is a common process of academic learning (Von Glasersfeld 2013) but does not represent a case of creative learning.

In order for creative learning to occur at the individual levels, student's need to be able to generate a new and personally meaningful understanding, which represents a blend of the learning stimulus with their existing understanding. In this way, their prior understanding has been transformed by the new experience or information

they have encountered. Learning theorists describe a similar transformation in various ways, such as accommodation (Von Glasersfeld 2013) or conceptual change (Zaitchik et al. 2016). In the context of creative learning, the emergent understanding represents a creative contribution to the individuals understanding. What creativity researchers have called subjective, personal, or mini-c creativity (Beghetto and Kaufman 2007).

The model of creative learning further posits that the personal mini-c understanding can transition into a little-c (classroom-level) creative contribution to the learning of others. As will be discussed in the next section, the model of creative learning represents a way of conceptualizing how personal creative insights can convert into social creative contributions. Prior to discussing how these asserted components and processes play out at the social (interpsychological) level, it is important to briefly mention the recursive possibilities that can occur throughout the process.

Specifically, creative contributions and creative combinations can spark additional combinations, possibilities, and contributions. The components and processes are not simply additive sequences. Although it is possible that a new learning stimulus will result in a new insight, it is also possible that a learning stimulus can provoke multiple creative combinations and thereby generate multiple creative contributions to one's understanding.

Moreover, as will be discussed in the next section, a student's new understanding can serve as a stimulus for the learning of others. In this way, the meaning-making process of creative learning can be thought of as representing a form of unlimited semiosis (Eco 1986). Specifically, unlimited semiosis in this context refers to the potentially endless process of new understandings serving as new stimuli, which can provoke new creative combinations and, in turn, creative contributions to one's understanding and the understanding of others (Beghetto and Schuh *in press*).

Interpsychological Sphere

The components of creative learning operating in the interpsychological sphere are conceptualized

as the potential for students' unique insights to contribute to the learning of others (Beghetto 2016). More specifically, the model posits that when students have an opportunity to share their new and personally meaningful understanding with others a window of the possible opens, which has the potential to contribute to the understanding of everyone involved. The greater the diversity within classroom contexts and the greater the difference in perspectives of the individuals who inhabit those contexts, the greater the potential for creative learning to occur for the students and teachers in those settings (Glăveanu and Beghetto 2016).

Specifically, the student who shares a new and personally meaningful understanding will have an opportunity to receive feedback that can help clarify, correct, or verify that understanding. This is particularly important in an academic context wherein there are existing norms and conventions for determining whether an understanding is accurate or at least compatible with what is known. Consequently, such feedback opportunities are typically viewed as a necessary aspect of formal learning (Lipnevich and Smith 2018), including creative learning.

Students who share their understanding also have an opportunity to make a creative contribution to the understanding of their peers and teachers. In this way, a student's new understanding can serve as a learning stimulus and new possibility for how others understand the subject matter under consideration. As discussed, the transfer from individually creative to socially creative can also be viewed as the transition from mini-c to little-c creativity (Beghetto and Kaufman 2007). This transition is also similar to what has elsewhere been described as the movement from primary to secondary creativity (Runco and Beghetto 2019). Primary creativity refers to the creator producing a creative outcome after engaging with some new medium or subject matter. Primary creativity can transform into secondary creativity when an external audience engages with the primary creative outcome and recognizes it as creative. Importantly, even when individuals are engaged in primary creativity they are still engaging in dialogue with "internal audiences" of past, present, and future interlocutors (Beghetto 2017;

Glăveanu 2017), which can influence how the primary creative outcomes take shape. Secondary creativity thereby refers to the creative experience of external audiences who engage with creative artifacts resulting from primary creativity.

Specifically, when students share an unexpected or different conception (primary creativity) and teachers and peers are willing to engage with that conception and try to make sense of it in light of their own existing understanding (secondary creativity), it is possible that the combination will result in a creative contribution in the form of a new understanding for others. In this way, the core components that result in a creative outcome at the individual level reoccur at the sociocultural level. As mentioned, given the recursive possibilities involved in creative learning, a creative contribution made by students to their peers and teachers can, in turn, result in the generation of additional possibilities that serve as new learning stimuli for others.

There are various individual and sociocultural factors that influence whether students will share their new perspectives and for those perspectives to make a creative contribution to others, including students' creative confidence (Karwowski et al. 2019), willingness on the part of teachers and students to take the risks necessary for exploring different perspectives (Glăveanu and Beghetto 2016), students perceiving the learning environment as supportive (Anderson et al. 2017), and teachers and students willingness to break from the prototypical and more convergent patterns of interaction in the classroom (Cazden 2001).

Taken together, the core components of creative learning (i.e., new possibility, creative combination, and creative contribution) represent a special case of both creativity and learning. As will be discussed in the following section, the posited processes involved in creative learning at both the individual and sociocultural level also represent various forms of the possible.

Creative Learning and the Possible

The possible is always and already present within each component and phase of creative learning. Indeed, as illustrated in Fig. 1, a

learning stimulus is itself a new possibility. The uncertainty entailed in the possible, but not yet known outcome, of engaging with a learning stimulus motivates people to resolve the doubt they are experiencing (Beghetto and Schreiber 2017). The resolution of uncertainty can occur in at least one of three ways: accepted, ignored, or combined. First, a stimulus that appears novel may be accepted as a case of what is already known. A novel stimulus may be too discrepant to be understood and is thereby dismissed as incomprehensible. Finally, a learning stimulus may be perceived as sufficiently novel to capture a person's attention and thereby move a person or group into a new state of the possible, which involves an effort to make sense of the stimulus in relation to what is already known.

The possible becomes further animated in the combinatorial phase because of the uncertainty involved in the outcomes that can be generated from this sense-making process. This, in turn, can result in the possibility of developing a new and personally meaningful understanding, which can lead to further possibilities for creative outcomes when shared with others. Moreover, the recursive nature of the process continues to keep the possible at play during each phase of creative learning.

In sum, the possible is shot through the creative learning process. Indeed, the possible remains active even once uncertainty is seemingly resolved in the form of a new understanding. Given that a person's understanding continues to develop and change over time, the potential for new creative contributions to one's own and others learning remains ever present. In this way, the outcomes of creative learning remain "inconclusive" (Corazza 2016) and filled with potential for change. As a result, creative learning can be thought of as playing a central role in clarifying and actualizing a broad spectrum of possibilities; including *possible pasts* (e.g., ways in which we reflect upon and build on our prior understandings), *possible futures* (e.g., new openings, alternatives and directions our understandings can take), *possible selves* (e.g., new ways of understanding ourselves and others), and *possible worlds* (e.g., new understandings about what our world is and can be) – see Glăveanu ("The

Possible as a Field of Inquiry," this volume) for a broader discussion of these different areas of possibility.

Directions for Theory and Research

The concept of creative learning discussed herein offers creativity researchers a lens for considering the role of the possible in the context of formal learning environments. The three components outlined in Fig. 1 provide a framework for researchers to examine how learning stimuli might serve as a prompt for generating new possibilities and ultimately contribute to the learning of individual students, groups of students, and teachers.

Theoretical and empirical work, aligned with this conception of creative learning, has been growing in recent years (Anderson et al. 2019; Gajda et al. 2017; Jankowska et al. 2018; Karwowski 2018). Such work has helped to refine and expand on the theoretical assertions of the model, including highlighting the importance of researchers developing and employing different methodological approaches to examine the multifaceted features of creative learning.

More specifically, this line of research has demonstrated how researchers can use blended designs to examine more fine grained, dynamic, and micro-longitudinal features of creative learning in classroom settings (Gajda et al. 2017); illuminate the inward and outward features of creative learning (Anderson et al. 2019); and tease out potentially different cognitive processes at play in creative learning as well as different ways students represent their understanding of academic concepts (Jankowska et al. 2018).

Although this work is promising, much additional work along these lines is needed. Studies are needed to further examine and test out the assertions posited in this model of creative learning. In particular, additional research is needed to simultaneously examine the individual and sociocultural aspects of creative learning and identify the factors and subprocesses at play in moving from creative learning stimuli to creative contributions in the form of new understandings.

Future work might therefore explore questions, such as:

- *What other mechanisms, components, and mediating or moderating factors are missing or misspecified in current conceptualizations of creative learning?*
- *What are the most promising methods and analytic techniques for identifying and testing the posited components of creative learning and what kinds of insights might be derived from such research with respect to clarifying the individual and socio-cultural factors involved in creative learning?*
- *How might clarifying the nature of creative learning and its relationship to the possible build on and inform related lines of theory and research in the fields of creativity studies and the learning sciences?*

With advances in more sensitive and dynamic methods and analytic techniques (Beghetto and Corazza 2019), including the growing work occurring both in neuroscience (Jung and Vartanian 2018) and sociocultural perspectives on creativity (Glăveanu et al. 2019), researchers are in a position to move theory and research forward on the concept of creative learning. Such work can help greatly in clarifying the nature and consequences of creative learning, including clarifying the role the possible plays throughout the process.

Cross-References

- Creativity
- Pedagogies of the Possible
- Possible in Education
- Uncertainty

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Creative Mindsets

Maciej Karwowski

Institute of Psychology, University of Wrocław,
Wrocław, Poland

Abstract

What makes creativity *possible*? Here, I posit that to make creativity *possible*, people must believe that a set of skills usually described under the umbrella of creativity is changeable and open to growth. Yet, many individuals tend to believe that creativity requires exceptional talent and that this talent is inborn and fixed. I discuss the concept of creative mindsets: subsets of implicit theories of creativity that refer to perceived creative potential sources. Creative mindsets' structure, nature, and antecedents are overviewed, and future research areas are proposed. It is concluded that mindsets form a particular case of *impossible-versus-possible* and *impossible-and-possible* distinctions, as they specifically refer to a *possibility* and *impossibility* to change, learn, and develop creativity.

Keywords

Creative mindsets · Fixed mindset · Growth mindset · (Im)Possibility of creativity

Is it *possible* to create something if individuals do not believe in their potential to propose something new and meaningful (see ► **“Creativity”**)? Although apparently straightforward, in fact, this is by no means a trivial question. On the one hand, sometimes people solve problems quickly: They have flashes of insight (see ► **“Insight”**) that had not been anticipated and result in great discoveries. On the other hand, when anecdotes are ignored, it becomes clear that such situations are

scarce. Creative activity is a long-term one, and it requires a lot of effort and persistence. To deal with creative tasks effectively, people must possess certain skills relevant to the domain and be able to self-motivate themselves to overcome obstacles they meet during the creative process (see ► [“Self-Regulation”](#)). The argument this chapter is built on states that one of the very basic, yet necessary, conditions to create is having a particular perception of creativity – the so-called creative mindset. More specifically, based on the recently proposed (Karwowski and Beghetto 2019) and elaborated elsewhere (Karwowski et al. 2019a) theoretical model of creative behavior as agentic action (CBAA), I posit that creative mindsets play an essential role in the complex relationship between creative potential, creative confidence, valuing creativity, and creative behavior.

This chapter consists of three main parts. After providing a brief definition of creative mindsets, its history is discussed by first reviewing crucial works on mindsets in general and then citing specific research that deals with creative mindsets. Then, the CBAA model is introduced and the hypothesized role of mindsets in this model is emphasized. Promising areas for future studies and still open questions that should be answered by consecutive investigations conclude this chapter.

From Mindsets to Creative Mindsets

Creative mindsets refer to people’s implicit theories about perceived sources of creativity. They are implicit as people are not always consciously aware of them; quite the opposite: They could have and often do have problems verbalizing them. These theories are also naïve, as they do not necessarily go hand in hand with professional knowledge of creativity scholars and findings obtained in empirical studies. Often, these theories are at odds with research results.

Some people believe that creative skills are fixed. When defining creativity, they usually refer to “Big-C” level accomplishments and attribute creativity to a small group of geniuses (fixed

mindset). Others define creativity as *possible* to be developed; they see it as a set of trainable skills that could be enriched at home, in school, and at work (growth mindset). Interestingly, things can also go the other way: When people are asked to think about great creators (e.g., Albert Einstein or Marie Skłodowska-Curie), they tend to think about creativity in a more fixed way, while when primed with everyday creativity, their growth mindset grows (Karwowski et al. 2020). Importantly and intriguingly, people can integrate fixed and growth theories when they think about creativity. A growth mindset defines what is *possible* – it focuses on the *possibility* to change and develop. A fixed mindset is instead focused on *impossibility* as it postulates stagnation. Thus, mindsets’ integration means that people do not think about creativity in terms of *impossible versus possible*, but rather *impossible and possible* at the same time. This paradox requires some unpacking. First, however, let us clarify the main concepts and their theoretical traditions.

The concept of mindsets emerged from early studies on implicit theories of intelligence initiated by Dweck (Dweck et al. 1995). This line of research has shown that while some people believe that intelligence and other abilities are innate, fixed, and difficult to change (later called fixed mindset), others see human skills as malleable, or *possible* to be developed through effort, instruction, and practice (so-called growth mindset). Several studies, including preregistered interventions, demonstrated that mindsets are related to students’ academic motivation and engagement: their resilience (Yeager and Dweck 2012), persistence (Mueller and Dweck 1998), and perceived self-worth (Dweck and Leggett 1988). One of the crucial theoretical predictions of early works was that a fixed mindset serves as an antecedent of the so-called performance goals (Karwowski and Anderson 2021), while growth mindsets build learning goals. In other words, people who hold a fixed mindset are driven by the focus to avoid mistakes. As they attribute outcomes to innate abilities, they feel frustrated and helpless when faced with setbacks and often achieve less at school or at work. At the same time, individuals who hold growth mindsets

adopt learning-oriented goals, attribute performance to the effort, and prefer challenging tasks that are not void of errors, but allow them to improve their skills and achieve more.

Creative Mindsets: Complexities and Paradoxes

Creativity is everywhere, at least potentially. The capacity to perceive reality in new ways, transform what is given, and produce ideas, behaviors, and works that make the world better is at the heart of humanity. Thus, it is not surprising that creativity or creativity-relevant characteristics, such as complex problem solving, are listed among the most critical skills for the new millennium (Ananiadou and Claro 2009). However, although the potential (see “► Potential”) to create is indeed among the very essential characteristics of every psychologically healthy individual, fulfilling it and choosing a creative way of living are far less common (see Karwowski and Wiśniewska 2021). Why is this the case? Why do some people decide to invest their time and effort to develop new ideas while others feel that such action makes no sense? Creative mindsets might be among the reasons.

Indeed, people's perception of themselves and the world around them matters for their motivation and activity. There are convincing empirical arguments that perceiving creativity as changeable or fixed influences people's activity (O'Connor et al. 2013). Suppose someone equates creativity exclusively with the activity of Nobel Prize winners. In that case, such a belief will naturally lead to a conviction that creativity is rare and impossible in ordinary people. Would such a person see any sense in engaging in creative activity and developing their skills? Unlikely.

Consequently, such *creative impossibility* will have negative consequences for leisure time or hobbies, their professional decisions, and functioning on a job market, which emphasize creativity-related skills. Mindsets may also matter when one is faced with failure while dealing with creative tasks. Previous works discovered that incremental theorists (those who hold the growth mindset) deal better with failure, as they tend to

perceive it as an opportunity to learn (Burnette et al. 2013). But if people are entity theorists, meaning they hold fixed beliefs, they instead consider failure as a threat and this risk of failure demotivates them to undertake the activity (Haimovitz et al. 2011). Thus, people holding growth mindsets are expected to engage more in creative tasks, while there are good reasons to believe that people with fixed mindsets will tend to avoid difficult problems.

Empirical evidence is in line with these predictions. Indeed, previous studies have shown that a fixed mindset is negatively correlated with creative confidence (Karwowski 2014), engagement in creative thinking (Pretz and Nelson 2017), and creative achievement (Puente-Diaz and Cavazos-Arroyo 2017). It also increases the likelihood that one will stop activity after a failure (Beghetto and Dilley 2016). What is more, a fixed mindset negatively predicts efficacy in solving insight tasks (Karwowski 2014) and the ability to propose many different ideas to open-ended problems (divergent thinking; O'Connor et al. 2013). A growth mindset has been positively linked to creative confidence and valuing creativity (Hass et al. 2016; Pretz and Nelson 2017), fluency and originality of thinking (O'Connor et al. 2013), effectiveness of creative problem solving (Karwowski 2014), as well as solving insight tasks and divergent thinking (Karwowski et al. 2019b). A growth creative mindset predicted more general positive affect for teachers during the early stage of the school closure in the COVID-19 pandemic (Anderson et al. 2021).

Logically, fixed and growth mindsets are opposites: If people believe that creativity could be developed, they should not assume it is carved in stone – and vice versa. Yet, interestingly, there is growing evidence that creativity might be described using both fixed and growth terms at the same time (Puente-Diaz and Cavazos-Arroyo 2017). A large psychometric study suggests that although there may be a general “either-or” tendency to describe creativity, people are still able to hold both mindsets (Karwowski et al. 2019b). Although apparently paradoxical, this perception has been explained by both the complexity of creativity and the differences in laypeople's

knowledge about it (Karwowski and Brzeski 2017). Knowledge about creativity and valuing it increases the likelihood of holding both mindsets. Also, awareness about current theorizing in creativity literature (e.g., Kaufman and Beghetto 2009) could make it easier to accept that some creativity forms are trainable (mini-c, little-c), while other may be more fixed or special talent based.

Creative Mindsets as Mechanisms

One of the recent conceptualizations of creativity, namely the creative behavior as agentic action (CBAA) model, proposes that creativity is a certain kind of action: an agentic action. In this model, creative behavior is thought of as a decision an individual is making (Karwowski and Beghetto 2019; Karwowski et al. 2019a). CBAA theorizes creative potential – be it divergent thinking, rich imagery, or curiosity – as a necessary yet not sufficient condition of creative behavior. Abilities matter. Yet, whether an individual will make an effort to invest them into the long-term activity is – by definition – uncertain (see ► “[Uncertainty](#)”) and depends on many other factors. The CBAA model specifically describes and empirically tests two such factors and possible mechanisms. The first is creative confidence. According to the CBAA model, people higher in creative potential also tend to hold higher creative confidence (see ► “[Creative Self-Efficacy](#)”), which drives them toward activity and problem-solving. Creative confidence mediates the links between potential and achievement: The more potential people have, the higher their confidence, thanks to previous successes and social feedback they obtained. The second hypothetical factor is valuing creativity. This characteristic describes whether individuals perceive creativity as something important for their self-perception. If creativity is not among the desired characteristics, even high potential will not result in observable activity and achievement. A recent study (Beghetto et al. 2020) found another factor that might strengthen the relationship between creative confidence and creative behavior (and

subsequently – creative achievement): a willingness to take adaptive risks. People who are risk-takers seem to be more effective in using their creative confidence to develop creative achievement. Other sets of characteristics that likely intervene in the link between potential and activity are creative metacognition (Anderson and Haney 2020) and creative self-regulation (Zielińska et al. 2020).

What is the role of creative mindsets here? Although empirical evidence is scarce so far, some theoretical presuppositions presented elsewhere (Karwowski et al. 2019) hypothesized quite a complex, twofold role of creative mindsets. First, mindsets may qualify the relations between creative potential and creative behavior, and namely serve as moderators of this relationship, with expected links between potential and behavior being stronger among incremental than entity theorists. But perhaps even more importantly, mindsets can also shape other creative confidence beliefs. Indeed, prior research has demonstrated a positive link between growth mindset and creative confidence (Anderson et al. 2021; Hass et al. 2016; Karwowski 2014), while the correlations between mindsets and potential or behavior (achievement) are usually weaker and less systematic (Hass et al. 2019). Consequently, mindsets are hypothesized to play a double role in the revised CBAA model to shape confidence beliefs and moderate potential-behavior links.

Discussion

Making creativity real, namely transforming each person’s potential into an observable activity that may eventually lead to achievement, requires acknowledgment that changes in creativity-related skills are *possible* at all. This is precisely the place where creative mindsets come to play. While the growth creative mindset focuses on creativity as a skill that might be developed through practice, effort, and practical strategies, the fixed mindset pictures creativity in terms of its innate, mainly inherited, roots and links creativity with Big-C endeavors.

Although common sense suggests that the growth mindset is adaptive and the fixed mindset destructive for creative activity, the reality is much more complex. People categorized as entity theorists (high-fixed and low-growth creative mindsets) or incremental theorists (high-growth and low-fixed mindsets) are not the only possible categories empirical studies observe. Approximately one-fourth of participants in many studies are classified as complexity theorists, meaning people who hold growth and fixed creative mindsets equally high. What stands behind this apparently paradoxical category? How does it happen that some people perceive creativity as *possible and impossible* to be developed simultaneously? A recent study (Anderson, Katz-Buonincontro, Boussetot, Mattson, Beard, Land, & Livie, under review) found that teachers held these contradictory beliefs simultaneously because they had never given the origins of creativity much thought. What is particularly important and promising, however, is that this study also found teachers-focused interventions to be able to significantly reduce fixed mindset (Anderson et al. [under review](#)).

One reason for thinking about creativity in terms of both mindsets may be associated with a deeper understanding of what creativity is and richer experience in creative activity. Someone who spontaneously disentangles personal insights and everyday problem solving from more professionalized or even eminent creative behaviors might fit well into this category. Accepting that creative thinking and problem solving are natural for many ordinary people will lead to a growth mindset. Simultaneously, while people can perceive themselves as creative in their day-to-day activities, they can feel unable to achieve professional level, outstanding accomplishments. This leads to a fixed mindset – perceiving some levels as unachievable to anyone, but the selected very few. Thus, integration of mindsets might stem from a more nuanced understanding of what creativity means and clarity about its different aspects.

Future studies will benefit from exploring this line of thought and examining the more direct

links between creative mindsets and possibility thinking (Glaveanu 2020). Given the growing interest in noncognitive factors observed in creativity and possibility literature, closer empirical examinations of the role of creative mindsets for the possible seem especially promising.

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Creative Possibility

► American Pragmatism

Creative Problem-Solving

Gerard J. Puccio, Barry Klarman and
Pamela A. Szalay

International Center for Studies in Creativity, The
State University of New York, Buffalo, NY, USA

Abstract

Life and work in the beginning of the twenty-first century has been described as volatile, uncertain, complex, and ambiguous. In this fast changing, innovation-driven environment, Creative Problem-Solving has been identified as a fundamental skill for success. In contrast to routine problem-solving, with straightforward and repeatable solution paths, today's problems are described as being complex and wicked. To generate the possibilities that can effectively address complex problems, individuals need to draw on the highest level of human thought – creativity. Creative Problem-Solving explicitly draws on, and promotes, effective creative thinking. The purpose of this entry is to describe and distinguish Creative Problem-

Solving from other forms of problems-solving. Moreover, as Creative Problem-Solving is a deliberate creativity methodology, this chapter also provides a description of the more specific thinking skills that are embodied by the higher-order skill of creative thinking and are explicitly called on in Creative Problem-Solving. Complex problems require complex thinking, and Creative Problem-Solving provides a structured process that allows individuals to more easily and efficiently deploy their creative thinking skills.

Keywords

Complex problem-solving · Creative Problem-Solving · Creative thinking · Creativity · Solution path

Contrasting Creative Problem-Solving with Problem-Solving in General

Webster's dictionary defines problem-solving as the process or act of finding a solution to a problem. While this definition provides a general description of problem-solving, it does not provide a nuanced understanding of the range of problems humans encounter in their personal and professional lives. Problems can be routine, complicated, or complex in nature. Routine problems have clear procedures and predictable outcomes (Stokes 2013). Complicated problems also have clear procedures and predictable outcomes but involve the simultaneous coordination of multiple routine problems or problems for which expertise is crucial for success. Complex problems are described as being ill-defined, novel, and ambiguous (Mumford et al. 2000). Escalating levels of thinking are necessary for humans to respond efficiently and effectively to routine, complicated, and complex problems. Broadly speaking, routine problems require accurate recall, complicated problems require critical thinking, and complex problems require creativity (Anderson and Krathwohl 2001). The purpose of this paper is to describe a problem-

solving approach and the various forms of thinking that are necessary to respond to problems that are most open to, indeed demand, new and valuable possibilities, in other words *creativity*.

A wide range of effective problem-solving processes have been developed to support individuals as they contend with routine, complicated, and complex problems. Most of these approaches are domain or industry specific. In contrast, a relatively smaller number of problem-solving processes have emerged from the field of creativity studies that are designed to be broadly applicable across domains and disciplines. In this entry, we examine one such methodology called *Creative Problem-Solving*, CPS for short (Osborn 1953; Puccio et al. 2011). As the name implies, CPS is a *creative* approach to problem-solving and therefore is focused on exploring what is possible, beyond what is known and demonstrable. This creative process methodology has been shaped by roughly 100 years of practice and is informed by insights derived from the field of creativity studies. CPS is designed to facilitate and actively engage creative thinking, which is the most complex form of cognition known to human beings, as such CPS serves as a meta-framework for an array of more specific cognitive and affective skills. Finally, CPS mirrors the level of complexity and flexibility inherent in the creative process, which means this problem-solving process is unique in its ability to both react to challenges and anticipate opportunities.

To fully appreciate the value of CPS, it is helpful to begin by examining key concepts related to basic problem-solving. Problems are created by situations that necessitate productive change. A problem space is how a problem is represented based on an initial situation, a goal state, and a search space. Problem-solving processes incorporate stages, strategies, tactics, methods, and techniques to navigate a problem space. The solution path is the series of steps that move the problem-solver from the “the initial state (the given situation/the given problem) to the goal state (the desired situation/the solution)” (Stokes 2013, p. 247).

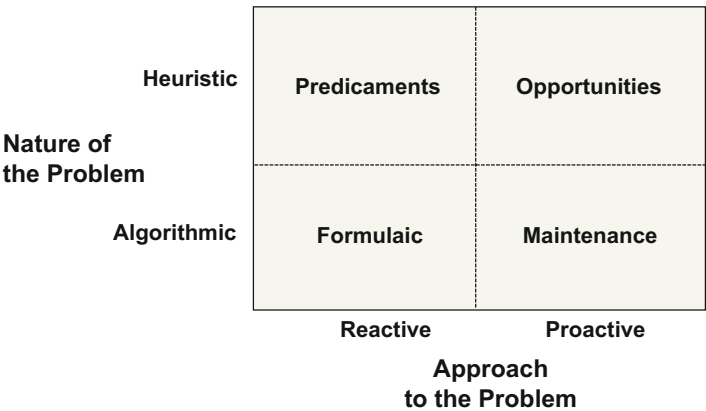
In general, the solution path to a problem can take one of two forms, depending on whether the problem is algorithmic or heuristic. Algorithmic problems are usually routine, sometimes complicated, but rarely complex. They are considered close-ended because they have a limited range of known solution possibilities and sometimes have just a single correct solution. As a result, the solution path for algorithmic problems is known, well-established, often sequential and generally predictable. Thus, there is no need to search for new possibilities as existing routines provide clear solution paths (Stokes 2013); creative thinking is not required or necessary.

Alternatively, heuristic problems are open-ended with no single set path to a predetermined solution. In fact, the path is shaped through a series of choices and decisions made as the problem is being solved. Any new data, insights, or ideas that emerge during this process can be used to reassess the situation and influence the criteria for the next decision. This happens repeatedly until there is satisfactory resolution. Therefore, the pathway is as unpredictable as the eventual solution, which must be discovered or created (Puccio et al. 2011). CPS was specifically designed to address complex open-ended problems that require a heuristic approach to the formulation of a solution path.

Algorithmic and heuristic problems can be further categorized by considering how individuals approach such problems, which is either in a

reactive or proactive manner (see Fig. 1, Problem Scenarios). As indicated earlier, problems are created by situations that necessitate productive change. These situations can be thrust upon us, in which case we need to react to them. In other cases, problems might be anticipated or discovered and proactively approached. When reacting to a problem that can be solved by algorithmic methods, formulaic processes can be used (i.e., established processes that lead to objectively correct solutions). In other cases, we might anticipate a future problem, for which we know how to respond. In such cases maintenance procedures are carried out to avoid problems that are anticipated. If you do not fuel your car up, either you will run out of gas (internal combustion engine) or battery life (electric vehicle). Predicaments occur when heuristic methods are needed to resolve an unexpected problem related to an established goal or area of performance. In other words, some change has occurred, and the problem-solver is uncertain about how to return to previous levels of performance. Opportunities appear when the possible opens up by taking a proactive approach using heuristic methods to change the current situation or to pursue an entirely new goal or outcome. Predicaments and opportunities, as depicted in Fig. 1, represent complex problems and therefore require a heuristic approach. The CPS process is designed to assist problem-solvers deliberately engage their creative-thinking abilities in order to produce

Creative Problem-Solving, Fig. 1 Problem scenarios. (Source: Puccio et al. (2011). Reprinted with permission)



new possibilities that successfully address predicaments and opportunities (Puccio et al. 2011). See Puccio et al. (2011) or Puccio et al. (2012) for a more detailed description of Fig. 1.

Because CPS is designed to manage ambiguity (relevant information is unknown; the solution path used to solve the problem is unknown; and the form of the solution is unknown or poorly defined), those engaged in the CPS process often experience a palpable sense of wonder about the possible. Problem-solving methods for algorithmic problems lack this sense of wonder due to the presence of considerable clarity; the problem space, the solution path, and the solution's final form are quite predictable. There is no need to engage the imagination. We suggest that CPS distinguishes itself from other problem-solving processes by leveraging ambiguity, encouraging a sustained exploration of what *might* be possible and providing techniques for many alternatives to be considered before a decision is made. This allows ample room for the imagination to wonder and wander, even as steps are being made along the narrowing solution path.

In conclusion, CPS is a transformational sensemaking process that ultimately bridges the gap between a current problematic state and a desired future possible state. CPS can also be described as a chaotic complex adaptive process, one that utilizes cognitive and affective skills in order to facilitate wonder about novel, poorly defined problems and their possible solutions. As a result, when people are trained in CPS, they develop the crucial problem-solving skills of flexibility and adaptability. Indeed, among the various creativity training programs, CPS has been identified as one of the most effective (Scott et al. 2004). In a world that is increasingly defined by change and complexity, creative problem-solving is now widely recognized as a vital twenty-first century skill. Unfortunately, while a recent *Bloomberg Businessweek* report indicated that creative problem-solving is the fifth most important skill sought by employers, it is the second most difficult skill to find (Otani 2015). Training in CPS can bridge that gap.

Creative Problem-Solving: An Introduction and Overview

Humans are innate creative problem-solvers. Since early humans developed the first stone tools to crack open fruit and nuts more than 2 million years ago, the application of creative thinking to solve problems has been a distinct competitive advantage for our species (Puccio 2017). Originally used to solve problems related to survival, the tendency toward the use of creative problem-solving to see, and then create, new possibilities naturally expanded to a wider range of human endeavors. As Morriss-Kay (2010) observed, “without these survival-enhancing functional origins, it is unlikely that we would have the neural equipment to create art” (p. 174). To be sure, it has been the unique human ability to apply imagination to solve problems that has resulted in the creation of our technological, social, and aesthetic world.

Creative problem-solving, when denoted in all lower case, refers to humans' evolutionary predisposition to employ higher-order thinking skills, namely, creative thinking, to solve complex problems. The kinds of complex problems humans contend with are not limited to tangible domains, such as science and technology, but also include the kinds of intangible problems found in such fields as philosophy, psychology, justice, and numerous other areas of human endeavor. When Creative Problem-Solving appears in upper case, CPS for short, it connotes an explicit creative process designed to deliberately engage creative thinking to resolve complex problems. CPS is a cognitive, rational, and semantic process that builds on humans' innate creative problem-solving tendencies. As a deliberate creative process, CPS helps individuals to move the production of creative breakthroughs from chance occurrence to directed thinking that improves the probability of original and valuable outcomes. This is accomplished by providing a structure that facilitates the application of creative thinking to open-ended problems. CPS provides individuals with a heuristic solution path that, once mastered, can be universally applied both by individuals and groups to more effectively and

efficiently resolve complex problems. The next section of this paper outlines the specific structure of CPS.

Creative Problem-Solving: The Thinking Skills Model

The first version of CPS to be disseminated for wide-scale use was featured in Alex Osborn's (1953) book *Applied Imagination*. One of the most popular books ever written on applied creativity methods, Osborn introduced brainstorming to the world through this publication. This seminal work described the creative process that, as an advertising executive, Osborn had tested and refined over several decades. However, while Osborn had tested the veracity of CPS and brainstorming in the business world, his dream was to start a movement that would change education. His concern was that success in life and work demanded creative thinking, as many of today's educational, business, and governmental leaders now tout (Trilling and Fadel 2009; Wagner 2008), and Osborn recognized that educational practices often excelled at undermining rather than elevating this crucial skill. Osborn offered CPS as a deliberate creative methodology that would allow individuals to more effectively apply their innate creative thinking abilities to complex problems.

Since its introduction CPS has gone through continuous improvement and evolution. Table 1 provides a summary of the variations of the CPS process that are direct descendants of Osborn's original process. For a more in-depth review of these processes, see Puccio et al. (2005). For the purposes of this paper, we will focus on the most current version of CPS called the Thinking Skills Model (TSM). Suffice it to say that one of the strengths of CPS is the fact that this deliberate process model has had a rich history through which several generations of scholars have refined and extended the work of their predecessors. As a consequence, the current version, CPS-TSM, is a beneficiary of the practical insights and wisdom that were derived from decades of experience and research.

The developers of TSM, Puccio et al. (2011), defined CPS as "a comprehensive cognitive and affective system built on our natural creative processes that deliberately ignites creative thinking and, as a result, generates creative solutions and change" (p. 43). These scholars further broke each of the key terms associated with the "CPS" into more specific definitions as follows:

Creative. "The production of ideas or options that are both new and useful" (p. 43).

Problem. "What exists when there is a gap between what you have and what you want" (p. 43).

Solving. "Taking action in some way...solving implies finding an answer or resolution to situations" (p. 44).

CPS-TSM serves as both a process and a model for applied creative thinking. Puccio et al. (2011) defined process as "a particular method of doing something, generally involving a number of steps or operations" (p. 43). As a process, CPS-TSM provides individuals and teams with a learnable system of steps that serves as a heuristic solution path for complex problems. Again, Table 1 provides a summary of the steps various scholars have used to operationalize the creative process. Focusing on CPS-TSM, Fig. 2 (Creative Problem Solving: The Thinking Skills Model) graphically illustrates the operations behind the current version of CPS. As a heuristic solution path, CPS provides problem-solvers with a rationale set of stages that move the problem-solver from the problematic present state to the desired outcome. In contrast to Stokes (2013) description of the solution path, which was mainly focused on the search for a workable solution, CPS provides a more expansive set of stages that are in keeping with comprehensive descriptions of the creative process (i.e., creativity is much more than idea production, it also involves problem construction, idea production, solution development, implementation, etc.).

Beginning with the outer layer of Fig. 2, CPS-TSM is organized into three broad stages known as Clarification, Transformation, and Implementation. These stages represent a logical progression from clarifying the nature of the problem to generating ideas that are transformed into

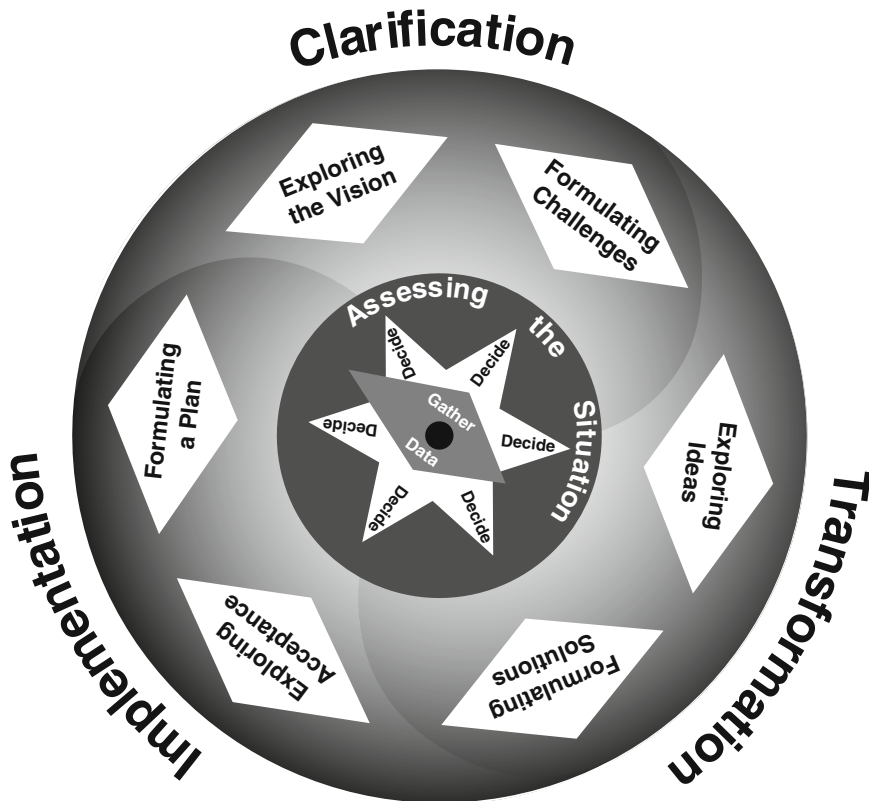
Creative Problem-Solving, Table 1 Creative Problem-Solving models: developments and spin-offs. (© Puccio et al. 2005 Reprinted with permission)

Osborn (1953) <i>Applied Imagination</i>	Osborn (1963) <i>Applied Imagination 3rd edition</i>	Parnes (1967) <i>Creative Behavior Workbook</i>	Isaksen and Treffinger (1985) <i>CPS: The Basic Course</i>	Isaksen, Dorval and Treffinger (1994) <i>Creative Approaches to Problem Solving</i>	Parnes (1988, 1992) Visionizing, <i>CPS and Visionizing</i>	Basadur (1994) <i>Simplex®: A Flight to Creativity</i>	Behar, Firestone and Miller (1997) <i>Creativity Unbound</i>	Isaksen, Dorval and Treffinger (2000) <i>Creative Approaches to Problem Solving</i>	Puccio et al. (2005)
The original model	CPS stream lined model	Osborn-Parnes model	Basic course Model	Componential model	Visionizing Model	Simplex® Model	Plain language model	CPS v6.1™ model	Thinking skills model
Orientation			Mess-finding	<i>Understanding the problem mess-finding</i>	Desires (1988) Objective-Finding (1992)	<i>Problem finding</i> problem-finding	<i>Explore the challenge</i> identify the goal wish, challenge	<i>Understanding the challenge</i> constructing opportunities	<i>Clarification</i> exploring the vision
Preparation	Fact-finding (problem definition, data gathering and analyzing)	Fact-finding	Data-finding	<i>Understanding the problem</i> data-finding	Fact-finding	<i>Problem finding</i> Fact-finding	<i>Explore the challenge</i> gather data	<i>Understanding the challenge</i> exploring data	(in assessing the situation)
Analysis		Problem-finding	Problem-finding	<i>Understanding the problem</i> problem-finding	Problem-finding	<i>Problem finding</i> problem-definition	<i>Explore the challenge</i> clarify the problem	<i>Understanding the challenge</i> framing problems	<i>Clarification</i> formulating challenges
Hypothesis	Idea-finding (idea production & idea development)	Idea-finding	Idea-finding	<i>Generating ideas</i> idea-finding	Idea-finding	<i>Problem solving</i> Idea-finding	<i>Generate ideas</i> Generate ideas	<i>Generating ideas</i> generating ideas	<i>Transformation</i> exploring ideas

(continued)

Creative Problem-Solving, Table 1 (continued)

Osborn (1953) <i>Applied Imagination</i>	Osborn (1963) <i>Applied Imagination 3rd edition</i>	Parnes (1967) <i>Creative Behavior Workbook</i>	Isaksen and Treffinger (1985) <i>CPS: The Basic Course</i>	Isaksen, Dorval and Treffinger (1994) <i>Creative Approaches to Problem Solving</i>	Parnes (1988, 1992) Visionizing, <i>CPS and Visionizing</i>	Basadur (1994) <i>Simplex®: A Flight to Creativity</i>	Vehar, Firestein and Miller (1997) <i>Creativity Unbound</i>	Isaksen, Dorval and Treffinger (2000) <i>Creative Approaches to Problem Solving</i>	Puccio et al. (2005)
The original model	CPS stream lined model	Osborn-Parnes model	Basic course Model	Componential model	Visionizing Model	Simplex® Model	Plain language model	CPS v6.1™ model	Thinking skills model
Incubation									
Synthesis									
Verification	Solution-finding (evaluation and adoption)	Solution-finding	Solution-finding	<i>Planning for action</i> Solution-finding	Solution-finding	<i>Problem solving</i> evaluate and select	<i>Prepare for action</i> select and strengthen solutions	<i>Preparing for action</i> developing solutions	<i>Transformation</i> formulating solutions
						<i>Solution implementation</i> plan			
		Acceptance-finding	Acceptance-finding	<i>Planning for action</i> acceptance-finding	Acceptance-finding	<i>Solution implementation</i> acceptance “sell” idea	<i>Prepare for action</i> Plan for action	<i>Preparing for action</i> Building acceptance	<i>Implementation</i> exploring acceptance
						<i>Solution implementation</i> action			<i>Implementation</i> Formulating a plan



Creative Problem-Solving, Fig. 2 Creative problem solving: the thinking skills model. (Source: Puccio et al. (2011). Reprinted with permission)

solutions that address the problem and concluding with the creation of a plan that moves the proposed solution into action. Each stage is comprised of two specific steps. These steps represent a movement from broader to more specific forms of thought. In Clarification the problem-solver first explores broad goals and wishes; this is called Exploring the Vision. Next, the problem-solver proceeds to Formulating Challenges. Here, specific issues and obstacles are identified that must be addressed in order to achieve the selected vision. The Transformation stage is initiated by Exploring Ideas, where the problem-solver engages in a broad search for possibilities intended to resolve the challenges identified in the previous step. This step is followed by Formulating Solutions, where the most promising ideas are refined into workable solutions. Finally, in the Implementation stage, the problem-solver shifts

his or her focus to the broader context within which the proposed solution is to be introduced. To promote success the problem-solver begins with the step called Exploring Acceptance, which is designed to facilitate an examination of the environmental factors that will either help or hinder implementation. This analysis influences the creation of an action plan, which occurs in the second step of this stage and the final step of the CPS-TSM process (i.e., Formulating a Plan).

While the above description provides a sequential overview of the CPS process, the application of the process is rarely linear. To be sure, there is a natural flow to the process, but individuals and teams can begin at any step and then flexibly apply the steps as needed. For example, if it is clearly understood what obstacle must be overcome to reach the goal, then it is advantageous to move directly into Exploring Ideas and

begin generating ideas that address the challenge. However, the production of ideas allows the problem owner to test his or her understanding of the challenge and in some cases facilitates the recognition that the wrong challenge is being worked on. When this happens the problem owner can revise the challenge statement and begin with a new set of ideas. Alternatively, if deeper analysis is required, the problem-solver can go back to the Formulating Challenges step and engage in a process of deconstructing the goal into an exhaustive list of obstacles and barriers that stand in the way of success. From here the problem owner prioritizes the challenges and returns to the Exploring Ideas step with a new challenge statement for which he or she will amass new ideas. From this point, the problem-solver can continue to move through the process until a plan is formulated and put into action.

Since CPS-TSM is a flexible process, problem-solvers should always begin with the step in the center of the process, referred to as Assessing the Situation. Puccio et al. (2011) described Assessing the Situation as the meta-step to CPS-TSM as it serves an executive function. Here problem-solvers gather data and then use insights gained from this understanding of the situation to make a decision as to where to go next in the process. For instance, if individuals or teams have already reached a conclusion as to the solution they wish to carry forward, which could be a new service, product concept, or response to a problem, then they might wish to pick up the process at the Exploring Acceptance step. Here they examine the context or contexts in which they hope to introduce their new solution, in order to anticipate forces that will help or hinder adoption.

CPS: A Model for Deconstructing Creative Thinking

Returning to an earlier point, CPS-TSM serves as both a process and model for applied creative thinking. The overview of the steps of CPS-TSM, and how they operate, relates to the use of CPS-TSM as a process. For a more expansive description of the application of this applied

creativity process, see Puccio et al. (2011). As a model of applied creative thinking, CPS-TSM delineates the thinking skills that make up creative thinking. In fact, this version of CPS is the first to articulate the cognitive skill that are necessary for successful creative thinking to occur and in particular the thinking skills that contribute to the effective application of creative thinking to problem-solving.

According to the updated version of Bloom's taxonomy of thinking (Anderson and Krathwohl 2001), creativity is the most complex form of thought humans can achieve. As a complex form of thinking, creativity must be comprised of a range of subskills. Like an athlete must master specific skills to achieve success, so must a creator master a range of skills to produce truly creative outcomes.

As a model of applied creative thinking, CPS-TSM associates a different thinking skill with each step of the process. In other words, each of the seven steps requires the problem-solver to adopt a new mode of thinking. When taught as a process, CPS-TSM helps individuals to develop the competence to more fluidly engage in each of these thinking skills. In short, CPS-TSM helps learners to master the nuances of creative cognition. Table 2 provides a summary of the thinking skills associated with each step of CPS-TSM.

Recent work in the area of emotional intelligence has highlighted what humans have intuitively recognized for centuries; our emotions and attitudes serve to promote or undermine our thinking (Brackett 2019; Goleman 1995). Within the field of creativity, there has been much research into the feelings and attitudes that promote higher levels of creativity. Borrowing from this literature, CPS-TSM postulates the affective skills that support each of the seven cognitive capacities. Put simply, it is believed that these affective skills modulate the specific cognitive skills found in CPS-TSM (see Table 3 for the CPS-TSM affective skills).

The Dynamic Balance in CPS: Balancing Divergent and Convergent Thinking

While the stages and steps of CPS have been variously expressed through the years, one

Creative Problem-Solving, Table 2 Some key cognitive skills associated with CPS

Step	Assessing the Situation (executive step)	Exploring the Vision	Formulating Challenges	Exploring Ideas	Formulating Solutions	Exploring Acceptance	Formulating a Plan
Purpose	1. To describe and identify relevant data 2. To determine next process step	To develop a vision of a desired outcome	To identify the gaps that must be closed to achieve the desired outcome	To generate novel ideas that address important challenges	To move from ideas to solutions	To increase the likelihood of success	To develop an implementation plan
Cognitive skills	Diagnostic thinking	Visionary thinking	Strategic thinking	Ideational thinking	Evaluative thinking	Contextual thinking	Tactical thinking
	Making a careful examination of a situation, describing the nature of a problem and making decisions about appropriate process steps to be taken	Articulating a vivid image of what you desire to create.	Identifying the critical issues that must be addressed and pathways needed to move toward the desired future	Producing original mental images and thoughts that respond to important challenges	Assessing the reasonableness and quality of ideas in order to develop workable solutions	Understanding the interrelated conditions and circumstances that will support or hinder success	Devising a plan that includes specific and measurable steps for attaining a desired end and methods for monitoring its effectiveness

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Creative Problem-Solving, Table 3 Some key affective skills that support CPS

Step	Assessing the Situation (Executive step)	Exploring the Vision	Formulating Challenges	Exploring Ideas	Formulating Solutions	Exploring Acceptance	Formulating a Plan
Purpose	1. To describe and identify relevant data 2. To determine next process step	To develop a vision of a desired outcome	To identify the gaps that must be closed to achieve the desired outcome	To generate novel ideas that address important challenges	To move from ideas to solutions	To increase the likelihood of success	To develop an implementation plan
Affective skills	Mindfulness Attending to thoughts, feelings, and sensations relative to the present situation	Dreaming To imagine as possible your desires and hopes	Sensing gaps To become consciously aware of discrepancies between what currently exists and is desired or required	Playfulness Freely toying with ideas	Avoiding premature closure Resisting the urge to push for a decision	Sensitivity to environment The degree to which people are aware of their physical and psychological surroundings	Tolerance for risks Not allowing yourself to be shaken or unnerved by the possibility of failure or setbacks

Source: Puccio et al. (2011). Reprinted with permission

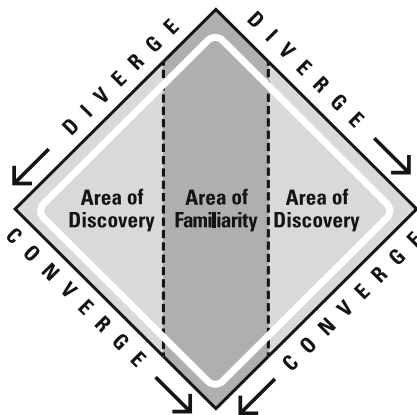
constant across all versions of CPS has been the intentional balance between divergent and convergent thinking within each step of the respective process. Indeed, the hallmark of CPS has been the separation of divergent and convergent thinking, with the application of divergent thinking preceding the use of convergent thinking. Humans developed the ability to direct their thinking roughly 100,000 years ago, and it is this ability that can empower us to take charge of the creative process. Figure 3 provides a visual depiction of the dynamic balance between divergent and convergent thinking. Divergent thinking, represented by the top portion of the diamond, involves a broad search for many, varied, and original options. Generally, and by nature, this search begins with the production of options that are already familiar, known, and not highly novel, but through persistence individuals are able to move their thinking into new areas of discovery. Both research and practice have demonstrated that four guidelines are useful in promoting more effective divergent thinking. These guidelines are *Defer Judgment*, *Go for Quantity*, *Make Connections*, and *Seek Novelty*.

The bottom portion of the diamond graphically illustrates convergent thinking, which is the ability to screen, select, and develop the most promising options. Here the wide range of options produced during the divergent thinking phase are reviewed and winnowed down to those options

that represent the greatest value relative to that step of the CPS process. New areas of discovery, those novel ideas generated during the divergent phase, then must be successfully introduced into existing situations and paradigms. Like divergent thinking, four guidelines are useful in promoting effective convergent thinking: *Apply Affirmative Judgment*, *Keep Novelty Alive*, *Check Your Objectives*, and *Be Deliberate*.

The balance between divergent and convergent thinking is essential to effective creative problem-solving efforts (see Fig. 3). Moreover, it reflects the evolutionary process found in nature, which is the balance between the production of novel variations and then the selective retention of those variations that prove to be most adaptive (Darwin 2003). Indeed, a recent study of problem-solving in groups highlighted that those groups who separately engaged in divergent and convergent phases of thought were significantly more fluent, flexible, and original in their idea production than groups that muddled these two basic forms of thought (Puccio et al. 2018). Additionally, teams that were guided by the process of separating divergent and convergent thinking (as shown in Fig. 3) produced solutions judged as creatively superior to those produced by teams who, by nature or habit, mixed divergent and convergent thinking during their problem-solving session.

The balance between divergent and convergent thinking represents a crucial polarity within the creative process. A polarity is the effective balance or integration of two concepts that are inherently value neutral. While at a glance they may appear to be contradictory, in practical terms they are dependent upon one another to achieve a greater purpose or goal. For example, work and play is a polarity, and when humans do not effectively integrate these two concepts in their lives, problems can occur (Miller 2004; Puccio 2017). Intriguingly, in the field of creativity Csikszentmihalyi (1990) has noted that the creative personality is full of contradictions, or what we see as polarities. Creative people, according to Csikszentmihalyi, are both playful and disciplined, humble yet proud, extroverted and introverted, passionate yet able to be objective. We would argue that this polarity between



Creative Problem-Solving, Fig. 3 Dynamic balance: divergent & convergent thinking. (Source: Puccio et al. (2012). Reprinted with permission)

divergent and convergent thinking represents a process polarity that is central to creative productivity and to the creative personality (Csikszentmihalyi 1996; Parnes and Biondi 1975).

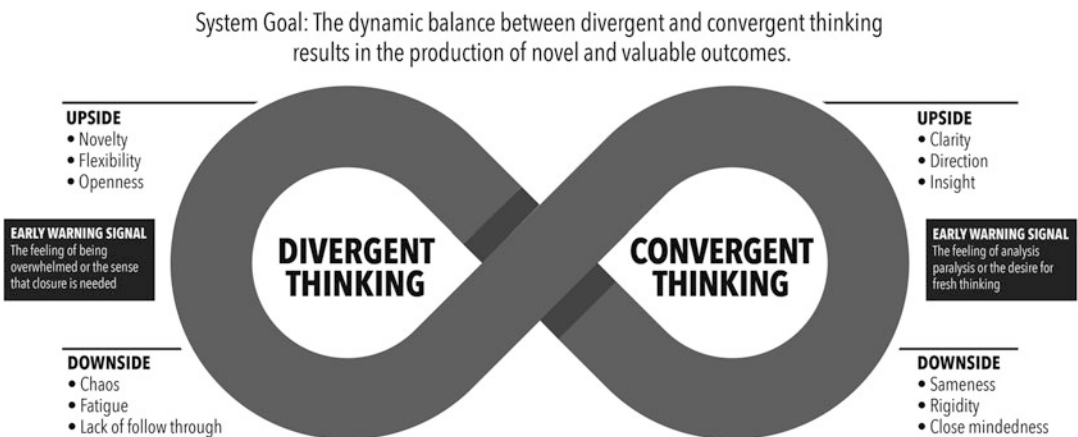
The application of polarity management theory (Johnson 1996) to the concepts of divergent and convergent thinking reveals important implications and insights relative to the balance or imbalance between these two fundamental forms of thinking. Polarity management theory holds that there are upsides and downsides that are inherent to both poles. Effective management leverages the positive aspects of the respective poles and mitigates the downsides. Poor management, such as becoming preoccupied with one pole over the other, results in negative consequences derived from that particular pole. Using our previous example, the work-play polarity might indicate that too much time at work can lead to burnout; conversely, excessive time engaging in play can interfere with the production of sufficient income.

Figure 4 (Polarity between Divergent & Convergent Thinking) provides a graphic summary of the dynamics of polarity thinking as applied to the interplay between divergent and convergent thinking. Either form of thinking, taken to an extreme, results in negative consequences. Effective creative problem-solvers know how to balance divergent and convergent thinking so that they can maximize the upside of both forms of

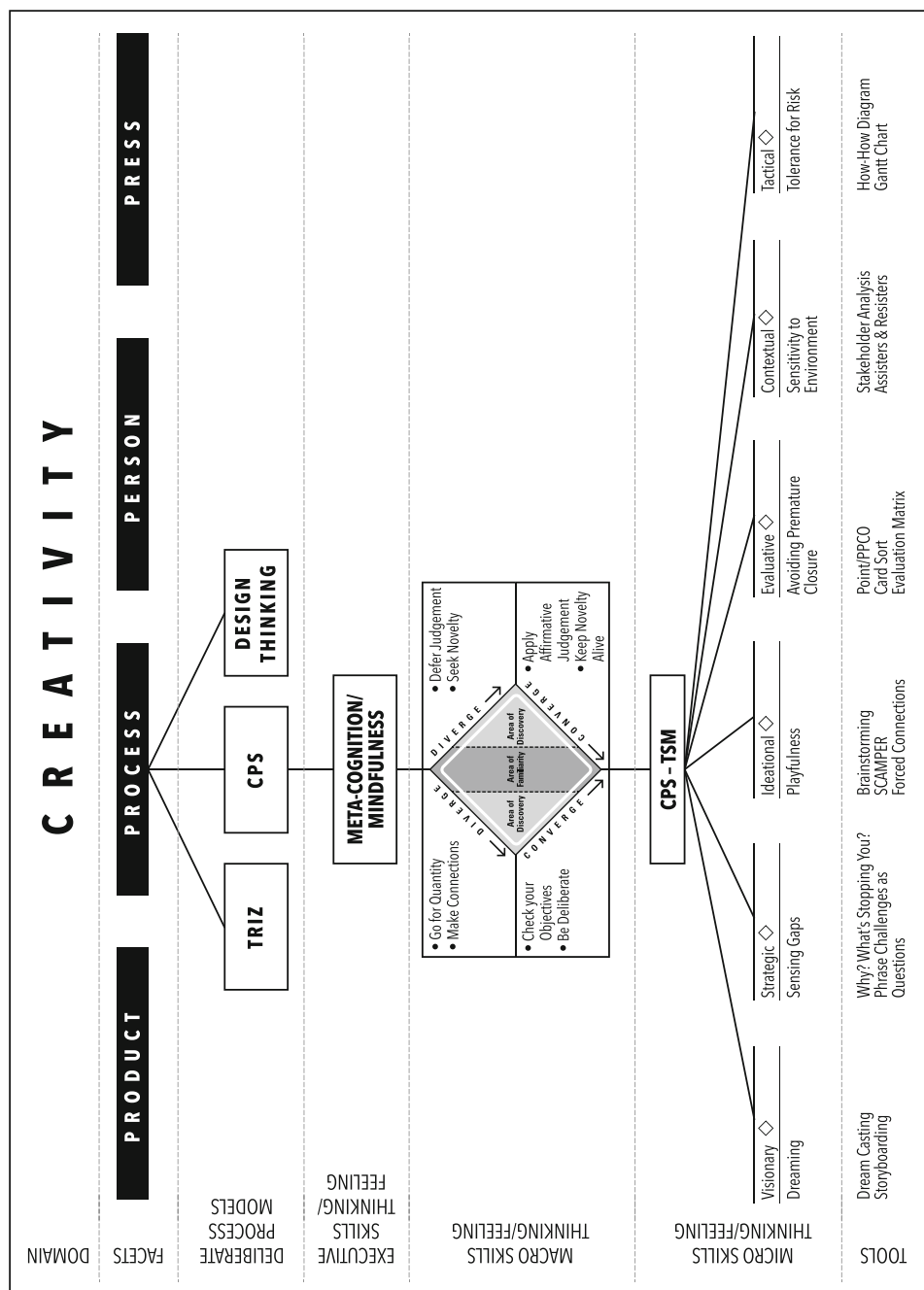
thought. To achieve balance, it is helpful for problem-solvers to recognize the early warning signals that they are spending too much time in one pole and thus risk slipping into the downside of that pole. We would argue, and research bears it out, that effective problem-solving relies on an ability to balance these two forms of thinking. Again, one of the overarching skills taught through CPS training is the capability of moving fluidly through the steps of CPS by effectively balancing divergent and convergent thinking in every step along this heuristic solution path. The result is not only the unhindered ability to generate possibilities but also to recognize among those possibilities which ones hold the greatest promise to resolve a predicament or to seize a new opportunity.

Summary: A Conceptual Map of Creative Problem-Solving

To summarize our review of CPS, we close by providing a conceptual map of CPS (see Fig. 5, Conceptual Map of CPS). Using levels of abstraction, moving from broad to more concrete concepts, this map is designed to show how CPS is situated within the broader field of creativity studies. We offer this map as a way of summarizing the information outlined in this entry. At the highest level of abstraction is the domain of creativity studies. The next level down reflects what are



Creative Problem-Solving, Fig. 4 The Polarity between divergent & convergent thinking. (Source: @ G. Puccio, 2019. Used with permission)



Creative Problem-Solving, Fig. 5 Conceptual Map of CPS. (Source: @ G. Puccio, 2019)

commonly referred to as the facets of study within this domain. This paper has focused on one facet, deliberate creative process methodologies, and within that facet one process framework called CPS-TSM. As a model for creative thinking, CPS-TSM involves two broad executive skills, one cognitive (i.e., meta-cognition) and one affective (i.e., mindfulness). These executive skills are necessary to operationalize two macro-skills, divergent and convergent thinking, which are featured in each step of the CPS process. As CPS-TSM intentionally invokes creative thinking, this creativity model can be further deconstructed into the micro-skills that comprise this overarching higher-order thinking skill. Finally, as a deliberate creative process, people can learn tools that enable them to effectively engage in these more specific forms of thinking. While some become enamored with learning tools, it is crucial to recognize how these concrete methods fit into the constellation of creativity. Like a marionette's string, a single tool pulls on only one appendage. To fully grasp the possibilities that can be derived from the marionette, and from the act of creativity, one must understand the interrelationships within the complete system.

Cross-References

- ▶ [American Pragmatism](#)
- ▶ [“As If” Thinking](#)
- ▶ [Complexity](#)
- ▶ [Creative Mindsets](#)
- ▶ [Creativity](#)
- ▶ [Curiosity](#)
- ▶ [Divergent Thinking](#)
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- ▶ [Open-Mindedness](#)
- ▶ [Wonder](#)

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Creative Self-Efficacy

Ross C. Anderson

University of Oregon, Eugene, OR, USA

Creative Engagement Lab, Eugene, OR, USA

Abstract

Creative self-efficacy is a person's prospective belief that they can organize and execute the necessary actions for a successful creative process, leading to a successful creative product within a specific context. Creative self-efficacy differs from other types of self-efficacy because it is a generative and innovative type of confidence. Creative self-efficacy

is not only necessary for persistence once creative efforts are launched, it is also key for choosing to take the risk of engaging in a creative task from the onset. This entry digs into these complexities within creative self-efficacy, specifically, by building on a socio-cultural perspective and drawing connections between creative self-efficacy and the possible as a field of inquiry.

Keywords

Future thinking · Agency · Collectivist · Growth mindset · Metacognition

Introduction

Creative self-efficacy derives from the late Albert Bandura's (1997) general concept of self-efficacy as a motivational driver for people across a variety of contexts. Self-efficacy builds on the premise that if someone doesn't feel very capable of being successful at something, they aren't likely to feel very motivated to try or persist. As such, researchers consider self-efficacy to reside alongside cognitive abilities as the key factor shaping the effectiveness of human functioning (Karwowski et al. 2013).

Bandura defined self-efficacy as a person's belief that they can be successful organizing and executing actions in a particular setting and on a specific task. Self-efficacy can be considered as general self-confidence in a broader context, such as in school or at work, and still play a role in important outcomes, such as school engagement and resilience (Amitay and Gumpel 2015; Anderson et al. 2019). However, Bandura promoted task and domain specificity in conceptualizing self-efficacy as more immediately consequential for human motivation for action. A sense of efficacy in oneself does not develop or sustain in isolation but rather through interaction and observation in the world around us. In this way, the term itself may be incongruous with the nature of the concept and somewhat misleading – it may emerge from the self, but it is influenced by others. Social cognitive theory (Bandura 1986) emphasizes the shaping of

efficacy beliefs through vicarious experience and observation of others, and recent research has illustrated how the self-efficacy a young person carries in a given domain, such as science, is deeply interwoven with the experience of others like them (Kim et al. 2021).

This entry digs into these complexities within creative self-efficacy, specifically, by building on a sociocultural perspective (Glaveanu et al. 2019) and drawing connections between creative self-efficacy and the possible as a field of inquiry. Several connections will be discussed. First, self-efficacy is prospective, so creative self-efficacy is naturally future oriented. Second, creative self-efficacy is momentary and hypothetical, involving a person gauging their confidence for an imagined task or setting that may never happen, which could immediately change depending on the experience and exposure that comes next. Third, because creativity doesn't exist in a vacuum creative self-efficacy is social and cultural as well as personal, meaning that a person will judge their confidence to be creative in a specific context based on implicit or explicit criteria about creativity and based on the experiences of others like them. Still, at the individual level, creative self-efficacy is a largely private and internal dialogue that will consider a variety of other factors that construct our identities across domains of life.

Fourth and related to the previous point, creative self-efficacy does not guarantee actual success in creative performance and accomplishment when creative efforts face the constraints and judgments of the world. These four connections link directly to imagined possible selves, worlds, and futures. While creative self-efficacy links to a person's past experiences and general self-concept (Anderson and Haney 2021; Beghetto and Karwowski 2017), the power of imagining successful creative efforts of a future self may be one the most powerful mechanisms to leverage human potential.

The Prospective Nature of Creative Self-Efficacy

As Mathisen and Bronnick (2009) pointed out, Bandura originally recognized the natural link

between creativity and self-efficacy in his origination of the concept:

Innovativeness requires an unshakable sense of efficacy to persist in creative endeavors when they demand prolonged investment of time and effort, progress is discouragingly slow, the outcome is highly uncertain, and creations are socially devalued when they are too incongruent with pre-existing ways. (Bandura 1997, p. 239)

Creative self-efficacy is a person's prospective belief that they can organize and execute the necessary actions for a successful creative process, leading to a successful creative product within a specific context (Tierney and Farmer 2002). Creative self-efficacy is not only necessary for persistence once creative efforts are launched it is also key for choosing to take the risk of engaging in a creative task from the onset. It is the foundational belief that future success is possible. Creative self-efficacy can help motivate people to approach, rather than avoid, the kind of risk-taking necessitated for creative engagement by highlighting the possibility of success rather than overemphasizing the likelihood of failure. In this way, creative self-efficacy is a future-oriented fuel for the possible. Research has illustrated the potential to develop creative self-efficacy with careful, focused, and intentional practice (Anderson et al. 2022a; Mathisen and Bronnick 2009). Self-efficacy is about imagining one's success rather than measuring – and potentially limiting – oneself based on past performance or comparison with others.

The Momentary Phenomenon of Creative Self-Efficacy

Creative self-efficacy differs from other types of self-efficacy because it is a generative and innovative type of confidence. There is a risk of failure in most, if not all, endeavors; however, the risks and uncertainty within creativity are especially provocative (Beghetto 2019). The possible within creative self-efficacy must confront uncertainty. This combination likely contributes to the context specificity and ephemeral nature of creative self-efficacy, where confidence in our skill and belief in creative success interact with the ever-changing circumstances in the sociocultural setting and

task. This evolving nature of creative self-efficacy may be in part why it correlates weaker with actual creative performance or creative achievements than with other creative self-beliefs and markers of creative identity (Haase et al. 2018). In fact, meta-analytic research suggests that the weak relationship between self-efficacy and creative performance does not improve substantially when there is greater specificity about the target and focus of those self-beliefs. Creative self-efficacy is about action and imagined success for oneself, not necessarily to satisfy the criteria set by others. Though creative self-concept can be framed, in part, by social comparison (Anderson and Haney 2021), creative self-efficacy is most often framed as self-reflexive. In that way, creative self-efficacy is personal, like a form of self-coaching.

In this way, creative self-efficacy may develop across experience in a domain as a person learns more about themselves and what is possible within that domain. The development of early confidence to be creative in a new domain likely grows out of the mini-c level of personally meaningful and important creativity (see the Four C Model of creativity; Kaufman and Beghetto 2009). Creative self-efficacy would then grow more robust across different aspects of a skill or domain to activate the resources to achieve Pro-C or Big-C creativity that affects others and even has lasting change on the world. The fact that creative self-efficacy promotes the agentic beliefs to take a risk and try something new is what matters most and why creative self-efficacy may indeed be so key to the functioning of our creative agency.

The underlying foundational role of creative self-efficacy and its progressive development across creative experiences was an important finding in recent research on teachers' creative development in the classroom (Anderson et al. 2022a). In related work, when teachers developed creative self-efficacy for their teaching alongside other creative self-beliefs (e.g., value of creativity for students and growth mindset about creative development), they also developed more resilience, joy, and well-being in teaching (Anderson et al. 2022b). Not surprisingly, teachers who felt stronger creative self-efficacy in teaching experienced less anxiety facing creative challenges (Anderson

et al. 2021). In the moment we face a creative challenge, self-efficacy likely serves as a protective factor for the possible. It provides courage, grace, and strength to step toward the discomfort of uncertainty rather than to fold to anxiety and run and hide.

Collectivist Creative Self-Efficacy

Importantly, Bandura's work on self-efficacy originated in observational learning – he found that human learning of norms and skills occurs through observations of others in various contexts (Bandura 1986). Mastery experiences are key to self-efficacy development, but humans also develop efficacy beliefs by observing the modeling and success of others. Similarly, scholars have recently emphasized the inseparable social and cultural aspects that shape our beliefs of and experience in creativity (Glaveanu et al. 2019). Bridging those perspectives, the self-efficacy we feel for our creative potential must be considered in relationship to others and the world around us. The balance of the self and others may depend on our cultural orientations. Cultural psychologists use individualistic versus collectivistic orientations to distinguish whether people emphasize personal or social identities (e.g., Markus and Kitayama 1991). The same distinction should be considered when looking at how creative self-efficacy develops and how our individual creative experiences may play a role in others' development of creative self-efficacy and vice versa. What you believe is possible for yourself naturally shapes what I believe is possible for myself.

Bandura (2018) called the role of vicarious experience and modeling of others in shaping our self-beliefs and overall sense of agency, proxy agency. He suggested that proxy agency shapes the social, cognitive, and motivational development of the self. The power of proxy agency may depend on how well people relate to one another based on shared experiences and culture. These factors were recently on display in a study on the development of science self-efficacy of racially diverse high school students. Their proxy agency grew from the experience shadowing undergraduate mentors, hearing their stories of resilience, and learning their strategies to take control of their

choices (Kim et al. 2021). Proxy agency may also have a reciprocal and reaffirming quality for people sharing their experiences, building their self-efficacy further. From a collectivist orientation, the development of one's creative self-efficacy, in particular, may be inseparable from the proxy agency modeled by others, who they can relate to socially and culturally. For instance, teachers shared the encouragement and confidence they felt from hearing about the creative ideas and risk-taking that other teachers were trying themselves (Anderson et al. 2022a). Encouragement from others also predicted the creative self-efficacy of college students in another study (Puente-díaz and Cavazos-arroyo 2017).

Motivating Action Not Guaranteeing Success

Creative self-efficacy is needed to persist in creative effort because hindrances, risks, and failures are likely (Tierney and Farmer 2002). However, research has also shown that creative self-efficacy is not enough to guarantee that creative efforts will be successful (Haase et al. 2018). Holding self-awareness about creative strengths and areas for growth alongside understanding of context and strategy may be just as important to put that self-efficacy to work (Anderson and Haney 2021; Beghetto and Karwowski 2017). That creative metacognition can be cultivated and may be an important part of transferring creative self-beliefs and strategies across different contexts.

Creative metacognition begins, though, with a growth mindset that suggests creative development is possible with practice and effort, rather than determined by a fixed level of creative ability (Lench et al. 2015). Not surprisingly, growth mindset beliefs about creative ability and creative self-efficacy are highly related in research (Hass et al. 2016). When a person develops a greater understanding about creative strategies within a specific context, such as in teaching, it seems to be more likely that they will see creativity through a growth rather than fixed mindset, providing a launching point for their creative self-efficacy to take shape (Anderson et al. 2022a).

Self-Efficacy as Pathway to Possible Future Self

A recent taxonomy of future thinking includes four basic forms of future thinking: (a) *simulation*, or the construction of a specific mental representation of the future; (b) *prediction*, or the estimation of the likelihood of a future outcome; (c) *intention*, or setting of a goal; and (d) *planning*, or organization of steps for achieving a goal (Szpunar et al. 2014). This taxonomy may be helpful for future work in creative self-efficacy. Creative self-efficacy can be considered alongside all four of these forms of future-oriented thinking when considering its role in shaping motivation toward specific actions and a future self. Additionally, it has been proposed as a self-belief underlying general creative ability facing nonspecific creative challenges (the semantic level in future thinking) and as a self-belief dictated by the specific domain, setting, or task (the episodic level in future thinking; Szpunar et al. 2014; Haase et al. 2018).

Though more research is needed, the potency of creative self-efficacy to motivate actual creative action and actual creative performance may be shaped in part by the level of specificity and alignment of those beliefs with the context, setting, and task demands. For instance, will a person's self-efficacy to come up with original uses for a common object have the same motivational power toward action in a furniture design class as their self-efficacy to come up with a new design for a living room chair? Creative self-efficacy may also differ in its influence depending on what form of future thinking it targets related to creative experience. For instance, do creative self-efficacy beliefs related to predicting future success in a creative challenge contrast or compete with a person's confidence to create and evaluate their plans to achieve that goal? Which self-efficacy beliefs are more likely to lead to the kinds of creative risks that result in a creative disruption or breakthrough?

To learn more about how creative self-efficacy functions in the shaping and pursuit of the possible, future research can parse out what aspects of the creative process may require the strongest self-efficacy to initiate and sustain engagement in creative efforts. Following Bandura's original encouragement (Bandura 1997), the development of

creative self-efficacy as a future-oriented phenomenon in the human experience and as a field of study must continue cultivating greater precision and specificity to become a powerful driver of the possible.

Summary

Creative self-efficacy is a powerful motivational fuel for the possible in creative thought and action. This entry presents four components of creative self-efficacy that describe the path of research taken thus far and suggest future directions related to the possible. Creative self-efficacy is prospective and naturally future-oriented. Creative self-efficacy is momentary and hypothetical and therefore context dependent. Creative self-efficacy is at once personal and private and existing outside the self, affected by social and cultural factors including the vicarious experience of others. Creative self-efficacy does not equate to actual creative accomplishment, but it opens door to that possibility. By framing creative self-efficacy through different components of future thinking, creative self-efficacy could become an anchor to the possible as a field of inquiry.

Cross-References

- Creative Development
- Creative Mindsets
- Creativity
- Hope
- Intentionality
- Open-Mindedness
- Prospection

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Creativity

Vlad P. Glăveanu
School of Psychology, Dublin City University,
Dublin, Ireland
Centre for the Science of Learning and
Technology, University of Bergen,
Bergen, Norway

Abstract

This entry approaches creativity as a possibility-testing and possibility-expanding phenomenon. It starts with a critical consideration of the definition of creativity in psychology, arguing that a study of the possible and impossible gets us closer to the nature of the creative

process. Then it proceeds to analyse the relation between (im)possibility and creativity at the level of actors, actions, audiences, artefacts, and affordances. In each case, the focus is on (a) how these elements contribute to the engagement with the possible enabled by creative expression and (b) how they are transformed by the possibilities and impossibilities discovered along the way. The entry ends with reflections on the relationship between creativity and other possibility-expanding phenomena.

Keywords

Creativity · Possibility · Five A's model · Actors · Actions · Audiences · Artefacts · Affordances

Introduction

Creativity is typically defined in psychology as the process leading to new, original, and valuable outcomes (for a broader discussion see Runco and Jaeger 2012). This basic definition, while useful for testing and measurement, is largely incomplete. We don't learn anything from it about the individual or groups doing the creating or the nature of the processes and contexts that generate and integrate, respectively, these special outcomes (for a more extensive critique, see Glăveanu 2014). Most of all, it can mistakenly give the impression that creativity is mostly concerned with novelty, originality, and value. Taken separately, each one of them are characteristic for something else: novelty is central for the experience of surprise, originality for things that are rare and unique, value defines the conventional. Even taken together, the three criteria – or two, if novelty and originality are grouped – don't do justice to the richness of creativity and its meaning for human existence and for society.

In this entry, I propose to explore the phenomena that lie “behind” surface indicators such as novelty, originality, and value and, in doing so, to tackle the deeper question of what creativity is ultimately *for*. What are we actually doing when we are creative? This question can be answered on many levels as people become creative for a variety of reasons. We

create in order to survive, to thrive, to express ourselves, to gain the recognition of others and, yes, to generate things that are new and useful. But what we essentially do through our creative acts, I argue here, is *engage* with and *expand*, more or less markedly, the space of the possible for our thinking, action, and way of being in the world.

Creativity, at its core, is the process through which we bring something that didn't exist before into existence. In other words, we materialize what is possible, even when the discovery of possibilities happens through the creative process itself (Vallée-Tourangeau and March 2019). As part of creative action, we venture beyond what is given in the "here and now" and enrich it with what could or might be, with the "not-yet-here," the "elsewhere," and the "nowhere" of imagination (Jovchelovitch et al. 2017). The defining characteristic of creativity, then, is not captured by the properties of its outcomes as much as it is by the nature of its process and this process, I propose, is at once possibility testing and possibility expanding. With this lens on, I will discuss as follows different interdependent "components" of the creativity system represented by actors, actions, audiences, artefacts, and affordances (for details about this 5 A's model, see Glăveanu 2013). For each one, the focus will be on: (a) how they contribute to the engagement with the possible enabled by creative expression and (b) how they are transformed by the possibilities and impossibilities discovered along the way. The entry ends with reflections on the relationship between creativity and other possibility-expanding processes.

Possible Actors

With the notion of "actor," I refer to the individual, group, or community that initiates a creative process. Actors are, therefore, at the center of creative agency without denying the fact that objects can also be considered agents (Latour 1991) and that, ultimately, the agency of human and nonhuman actants equally depends on their interaction (what I have previously called "co-agency"; see Glăveanu 2015a). I prefer, however, the notion of actor here to those of agent or

actant because it captures, at least in the case of human beings, the social and cultural dimension of creative people and communities. Actors exist, by necessity, within a field of social relations that both enable and constraint their horizon of possibility. At any moment in time, an actor's agency and sense of possibility is shaped by his or her interactions with others, within a given material and cultural environment. While creative people might be considered to have a wider sense of what is possible to achieve, this doesn't mean that they are faced with less constraints; on the contrary, barriers and obstacles play an important role for the creativity of the person and, when not directly available, they tend to be self-imposed (Stokes 2005).

This creative agency is experienced by actors differently depending on age, life, and cultural context. One and the same person will have different perceptions of what is possible and impossible given their changing goals and concrete interactions. But these experiences of possibility and impossibility also accumulate over time within the self and create *expectations* as to what can come easily, what would be hard to accomplish, and what is altogether unachievable. Such accumulations are discussed in the creativity literature often in terms of identity, self-concept, and mindsets (see Karwowski and Kaufman 2017). They designate a series of self-beliefs or perceptions of one's abilities, particularly when it comes to creative expression. Some people will approach problems with a creative attitude, ready to see new opportunities for self-expression, while others will feel stressed or even demoralized by a given obstacle. And these perceptions are likely to be domain and even task specific (Kaufman and Baer 2004), leading to a rich and unique tapestry of possibilities and impossibilities for the self, woven not in solitude but in close relation to other actors.

Indeed, creative actors' engagement with the possible is rooted in their life experience which grows, in turn, out of their social, economic, and political context. Members of privileged groups in society tend to develop more easily a creative identity or, at the very least, have their creativity recognized by others. In contrast, marginal and oppressed groups struggle for recognition and visibility, including the chance to develop new

possibilities for themselves. While the latter might display, on a daily basis, more creativity than the former due to the constraints they come up against, this creativity is either unrecognized or downplayed (see Kaufman and Glăveanu [in press](#)). The most serious consequence of this dynamic is the internalization of impossibilities and, with it, the extinction of the natural drive to create, grow, and improve one's situation. In this sense, a study of creative actors should always be connected with that of (im)possible actions for them within society.

Possible Actions

Action is the cradle of possibility (see Glăveanu [in press](#)) in the sense that our awareness of what is possible and exploration of it necessarily depend on action. This doesn't mean that action is reduced to its behavioral dimension; thinking is a kind of action (Wertsch [1998](#)) just like imagination is (in fact, Vygotsky referred to it as internalized play; Smolucha [1992](#)). What is distinguishable about the study of human action is precisely its focus on the coordination between psychological and behavioral facets. The former includes goals, intentions, feelings, and symbolic forms of understanding, the latter is expressed in gestures, postures, and practical forms of doing. Human action is, at all times, *culturally mediated*, as we use tools and concepts to guide its course. This mediation helps us open up and close down various spaces of possibility. Before we act, we envision multiple outcomes; as we act, we have chosen one to materialize or, in some cases, let fate decide; after we have acted, we observe the outcome that actually came to be and its set of (im)possibilities for future action.

This dynamic between doing and undergoing, between acting on the world and perceiving the consequences of our action, has been widely discussed by John Dewey in relation to art (see Dewey [1934](#)). It is also much more widely applicable, as a framework, for other domains of creative activity (Glăveanu et al. [2013](#)). What this simple framework is missing, however, is a better understanding of how the

sense of possibility shapes our course of action and how action, in turn, redefines what is possible at every moment. In many ways, human action can be read in terms of the dynamic between potentiality and actuality – what exists in potential guides our relation to the actual and what becomes actual recreates, for us, a new sphere of the potential. Possibility-testing, trial and error, and experimentation processes are all specific for creative action, even in the case of “conceptual” creators (Galenson [2011](#)). It is because one can never be fully certain of the outcomes of human action that the unexpected is necessarily embedded within it. And, with it, a new horizon of unforeseen possibilities (and impossibilities) arises. To act creatively means, thus, to make the most of the accidental aspects of our actions by being attentive to the situation as it evolves and attuned to others in what Dewey called the experience of “undergoing.”

The range of possible actions in creativity isn't reducible, however, to acts of making. As an ecology of relations, engaged in by various actors and their audiences, creativity depends equally on making and on symbolic interpretation. This is why, as we shall see next, audiences have a crucial role to play in the creative process – they can give an existing creation new meaning and a new “life” by noticing more of what is possible with it or because of it than even the initial creator did. And then, there is also an important part played by *failure* in the process of creativity (see also Tahirsylaj [2012](#)). Moments of uncertainty, risk, and apparent failure can become the seeds for the discovery of previously unperceived (and sometimes unconceivable) potentialities. Failed actions not only help us come against what is impossible – given that things don't work, break, or generally resist our intentions and vision – but, in making us aware of an impossibility, they often reveal pathways to overcome it.

Possible Audiences

It would seem, at first, that actors and their actions solely define the field of possibility. But

creative actions are, most of all, *interactions*, in the sense that other people and material tools respond or react to, respectively, the acts and intentions of the creative actor. Audiences emerge, thus, as central to engaging with the possible as *cocreators* of the phenomenon we call creativity (see also Vygotsky 1990). By audiences I don't mean here a generic, anonymous public. I refer to each and every person or group the creator is in dialogue with, explicitly or implicitly, as part of a process of creating. These people can be family members, friends, peers, mentors, competitors, critics and, indeed, more distant publics the creator is not directly in contact with, but that still exert their influence on his or her thinking.

The role of audiences in creativity is, as such, not reduced to passive receptors but active contributors to the preparation, production, and evaluation of creative artefacts. In each case, the view, perspective and expertise of other people become essential. Nothing is created in complete solitude and even one's most personal and unique ideas grow out of a personal history of living within society, learning and using a language, and becoming part of a culture (or more). Audiences help creators engage with the possible by showing them that other ways of thinking or acting in the world exist or can be conceived. It is the *difference* between self and other, between actors and audiences, that ultimately represents the engine of creative expression. Without this difference, we would live in worlds in which there is no possibility of being surprised, of learning something new, or of witnessing any emergence in the sphere of society. Differences of perspective nurture the possible and reflective dialogues between these perspectives are essential for the creative process (Glăveanu 2015b). These dialogues, or the acts of putting different perspectives in relation to each other, fuel our creativity and imagination by leading to new perspectives and by making us aware that we hold a perspective *among many* possible others. It is this experience of one's position and perspective in the world as one among many that makes creative actors wonder what else might

be there, what could be possible above and beyond the things we perceive and envision (for details see Glăveanu 2019).

Audiences don't have to be physically present in order for these possibility-expanding processes to take place. The perspective of other people can be taken by us imaginatively and we are all in "dialogue" with the ideas of mentors and role models, including some which have long past or we have never met in person. And there is yet another interesting relationship for creativity and that is the one with *future audiences*. Creative actors often ask themselves – or, if not, should be taught to ask themselves more – how their actions and artefacts impact other people, people who are not present, who don't have a voice, and especially the next generations. Leaving one's mark on the world is exciting, but its creativity will depend on how it serves those from a future that is yet to come (for the relation between creativity and wisdom see Sternberg & Lubart 2001).

Possible Artefacts

Artefacts participate in different ways to the creative process. On the one hand, various artefacts are used to create, from sophisticated technologies to the more traditional pencils, paintbrushes, and colors. On the other hand, artefacts designate the outcomes of a creative process, its visible or materialized conclusion, which doesn't mean that these outcomes necessarily have to be objects – the products of creativity can be symbolic or ideational or embodied in events or performances. Ultimately, by calling these end products "artefacts," we point to the fact that they have a cultural basis and contribute, in turn, to the broader culture of the creative actors and their audiences (Glăveanu 2011a).

It would seem, at first glance, that once the creative process is complete and the artefact "stabilized" in a certain form, possibilities have ended. If anything, artefacts come to represent the fossilized expression of what was possible but became actual and fixated in a given form. This understanding is misleading, however, on two accounts. First of all, artefacts can and do

initiate new creative processes in the case of creators, who can be inspired to pursue the development of a series, and users, who might be prompted to adapt the artefacts to their own needs and effectively recreate them (see, for instance, discussions of user innovation, see Von Hippel 2005). On the other hand, an artefact itself is never a fully finished or stabilized form. This is captured by how difficult it is for most creators, especially in the fields of art and design, to say when something is “done.” And even when, by necessity, a creative outcome is released as final, its interpretation and reinterpretation in society keep it creatively “alive” and open to a wide range of possibilities.

These ideas have been captured in the literature by concepts like “*boundary objects*” and the “*open work*.” The former designates those artefacts that are situated at the intersection between multiple communities and related to differently by them (Star and Griesemer 1989). Most well-known products of creativity tend to address various users and interpreters and to stimulate debate, even controversy. It is through this clash of perspectives that new possibilities emerge, either for redefining the creation or generating other artefacts with original properties. The notion of “open work” originates in the writing of Umberto Eco (Eco 1989), who noted how some artefacts – especially artworks – are never meant to be finished. They are meaningful and creative precisely because they remain open to interpretation, somewhat ambiguous in nature, and versatile in use. For example, a musical score can be seen as the standard that allows no deviation but, at least historically, it gave creative actors a set of general guidelines from which they could improvise and to which they could add. Not all creative artefacts are equally open to the possible by design, but all of them *could* be if audiences are free to reinterpreting what has been created (see also the entry on “► [Creative Inconclusiveness](#)” in this encyclopedia). For this to happen, the dominant culture of deference to creators and their products needs to be replaced by one that values co-creation and a playful interaction with the ideas and objects produced by others.

Possible Affordances

Creativity is not reducible to ideation or insight alone and not even best represented by it, despite the light bulb being one of the most common symbols for the creative process (Glăveanu 2011b). This kind of representation is wrong on several accounts. First of all, it seems to suggest that the essence of creativity is “getting the idea” which, in reality, is part of a much more complex process that involves doing and undergoing as well as testing various possibilities (see the section before on “[Possible Action](#)”). Second, the moment of insight is depicted as psychological and individual in nature. It takes place “inside the mind” of creative people with little help from the environment, social, or material. I discussed above, especially in relation to audiences, how important the role of others is for creative expression. A further reflection is needed about the part played by materials in creative work.

Most creative actions are highly *embodied* and make use of a wide range of objects or tools. In other words, their expression is physical and material as much as it is psychological or mental (and, in fact, the two are sides of the same coin). The psychology of creativity has been extensively concerned with creative cognition and ideation (see Ward et al. 1995) and much less so with the materiality of creation. To properly unpack the latter, we would need theories that consider the interaction between person and objects as bidirectional and focus on their relationship rather than each “term” taken separately. The notion of *affordance* goes a long way in this regard. Initially coined by Gibson (Gibson 1986), affordances designate action potentials for our action or, put differently, what it is possible for us to do in relation to the objects surrounding us. Whether an object “affords” a certain course of action or not is immensely important for creativity (see Glăveanu 2016) and, more broadly, for our understanding of the possible (see the Affordance entry in this encyclopedia).

To perceive and act upon an affordance constructs the realm of possibility for our action. Unperceived affordances, then, represent missed opportunities to do things differently. Equally,

affordances that are perceived but not acted upon, for different reasons, are possibilities not taken. Finally, there are objects with special affordances we can imagine but could never have in practice (like a square circle), that belong to the realm of the impossible. Creative action employs new and unexpected affordances to push back against impossibility and widen the space of what is thinkable and doable for the person and, in some cases, for society as a whole. A material approach to creativity and the possible, as such, builds on the relation between perspectives, or what the person “would do” in a given situation, and affordances, or what he or she “could do,” all framed by broader cultural norms (or the “should do” of the context). Sometimes these elements are in alignment, oftentimes in tension. At times, the “would” or the intention guide the action and things go smoothly; other times, the “could” of affordances reveals itself as an important constraint on the creator’s imagination. In these cases, perspectives and intentions need to be re-aligned with reality or reality changed somehow to make one’s creative vision possible.

Concluding Thoughts

In this entry, I discussed creativity as a relational and sociocultural phenomenon, an epistemological position that underlies the five A’s framework. More than this, I proposed that the nature of creativity relates less to “surface” criteria such as novelty, originality, and value, and more with the expansion (and the reduction) of the possible through the dynamic interrelation between actors, audiences, actions, artefacts, and affordances. Each one of these “elements” is constituted by its relationship with the others within a realm co-constructed possibility. In the end, these five A’s and their connections belong, at once, to the actual and the potential. They exist at any moment in time but do so within a variable set of relations that foster certain possibilities while closing down others. In this sense, adding “possible” as a qualifier for each one of the A’s is meant to emphasize the orientation toward an essentially open future that any creative system is necessarily defined by.

If the possible and its exploration occupy a central role in creativity, it’s important at the end to reflect on the place and value of creativity for human possibility. Creativity, as this encyclopedia demonstrates, is only one of many processes that relate us to the possible in our existence, ranging from imagination and innovation to wonder, serendipity, and anticipation. While it is beyond the scope of this short entry to detail the similarities and differences between these phenomena, creativity stands out among them as the process that articulates *both* becoming aware of new possibilities and acting on them. This is because, as a process, it cuts across the divide between mental and practical activity, between the rather “inner” forum of imagination and different types of thinking, and the “outer” world of implementing ideas through innovation and different forms of making. Wonder and serendipity are equally relational processes, bridging person and environment, but they have a less prominent connection with doing or making than creativity does. The possibility-testing and possibility-expanding facets of creative action are deeply integrated with each other. The first captures the experimental nature of any creative process, open at all times to the unknown, to chance and to the unexpected. The latter designates its main effect: acts of creativity and their outcomes push further the boundaries of the possible at an individual and collective level, coming up against, overcoming, and creating new horizons of impossibility for creative thinking and action to struggle with.

If we were to take the possible seriously in our theories and studies of creativity, we would pay closer attention to topics such as difference, perspective, culture, and the future in our research and practical interventions. Creative products are novel and useful, among others, and creativity does require creative people, but its main function goes beyond these issues. It concerns, first and foremost, the eminently human propensity toward the possible and the quest to cultivate it in our daily existence. And, if this is correct, the reverse must also hold: to reduce creative potential and expression, for self and others, means to diminish the possibility of existing in and acting on the world as full and dignified human beings (see also Corazza 2017).

Cross-References

- [Affordance](#)
- [American Pragmatism](#)
- [Creative Inconclusiveness](#)
- [Creative Mindsets](#)
- [Creative Self-Efficacy](#)
- [Imagination](#)
- [Innovation](#)
- [Serendipity](#)
- [Wonder](#)

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Crisis of the Future

Alfonso Montuori
California Institute of Integral Studies, San
Francisco, CA, USA

Keywords

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Utopia

Definition

The notion of a “crisis of the future” was introduced by French philosopher Edgar Morin (Morin and Kern 1999). It refers to the loss of the possibility of progress, as well as a loss of a sense of what progress even means or might look like. As a result, there is a loss of *direction, of possibility, and of value* (our sense of what constitutes progress reflects what we value). This loss is exacerbated by the fear of environmental, nuclear, or other catastrophes. Positive visions of the future are replaced in popular culture by dystopian, post-apocalyptic scenarios. It is unclear how to even *think* about the future, or what might be more desirable futures. Morin interprets the term crisis in one of its original meanings, as *the moment when a diagnosis is possible*, and this is what makes his approach particularly relevant.

Background

The implications of the crisis of the future and the lack of positive (nondystopian, nonapocalyptic) visions of the future are considerable. As the Dutch futurist Fred Polak has written (Polak 1973),

The rise and fall of images of the future precedes or accompanies the rise and fall of cultures. As long as a society's image is positive and flourishing, the flower of culture is in full bloom. Once the image

begins to decay and lose its vitality, however, the culture does not long survive. (p. 19)

Symptomatic of the crisis of the future is the fact that in the first decades of the twenty-first century the term *progress* has virtually become extinct. There are few if any positive images of the future either in academic research or popular culture. What were formerly viewed as sources of progress – science, technology, and industry – are now viewed as the sources of today's unsustainable society. Utopian projects are largely viewed as the royal road to dystopias, whether in the Soviet Union or Mao's China, Jonestown or Rajneeshpuram. One significant exception, we will see, is the utopia of the free market, undergirded by the thought of Ayn Rand (Achterhuis 2010).

In the West, the broad association of the future with linear progress, technological advances, and financial prosperity appears to have collapsed (Jameson 1991; Ryan 2019). The Millennial generation is the first generation to face the possibility of being worse off than their parents economically. They are also faced with pandemics, looming environmental catastrophes, global terrorism, resurgent nationalisms, political chaos, a loss of faith in leaders and institutions, and the general sense that the world is going to hell in a handbasket (Higgs 2019). In 2009, a poll showed one in three American kids aged 6–9 (now “Generation Z”) were afraid the planet would somehow be destroyed by the time they grew up, and half said they worried it would be a bad place to live. African-American and Hispanic children worried even more than white children.

It is not only the West that is struggling with the future, but also China has seen a remarkable social and economic transformation in the last 30 years. Unprecedentedly, rapid economic growth has brought with it serious environmental issues, corruption, inequality, severe dislocation and alienation, and many forms of crime that did not exist before the economic explosion. There are questions emerging about desirable futures, given the country's radically different new direction and the

rapidity and seeming inevitability of the current changes and the elimination of the previous culture, both physically, as cities are often torn down and rebuilt, and in terms of values and a sense of community and history (Gao 2015; Jacques 2009).

Morin points out that the term crisis, which today has generally come to mean a moment of great trouble or difficulty, historically also referred to a turning point in a disease when a *diagnosis* could be made (Morin 2020). One aspect of Morin's diagnosis is that the crisis of the future is an interconnected *poly-crisis*. This poly-crisis is not limited to one factor like the economy. It affects all dimensions of human life, from the economy to the environment, from gender roles to race, and from work to play. The larger context of the crisis of the future, and arguably one key reason for its pervasiveness and its radical nature, is the current global transition between two ages. We are between stories: One age described variously as "modern" or "industrial" appears to be ending, and no new age or new stories have emerged as yet. This absence can be seen in the ways scholars have described current times using the prefix post-. Terms like *postindustrial* and *postmodern* have been in circulation since the 1970s. The prefix post- indicates not only the acceptance that one age is ending, but also the inability to fully articulate the emerging age. During this transition phase, this *interregnum*, life has gone from being solid to liquid (Bauman 2007). It has become postnormal (Sardar 2010, 2015): Everything seems upside down, nothing makes sense anymore. There is a closing down of possibilities, but it seems no new possibilities have opened up.

How Can I Miss You if You Won't Go Away?

Why does this crisis of the future persist? Why has it been so hard to get beyond "post-"? The crisis has to be contextualized in the larger historical moment, the end of the modern era, and the transition between two eras or epochs. Momentous historical transitions like this do not happen

overnight. It should also be noted that the notion of a transition time may be familiar to some intellectuals, activists, and in some New Age circles, but it has not penetrated the political or the popular discourse in quite the same way. Second, the transition is particularly momentous. The impact of technological changes has been dramatic. The Internet and automation are just two notable examples. Arguably even more dramatic is the challenge to humanity's own self-understanding: What does it mean to be a human being at the opening of the twenty-first century? As we shall see, there are, in broad strokes, two very different and opposed views.

A strong global cultural trend that has been called a "silent revolution" of value change has been in motion since the 1960s. It is described in this way:

The trajectory of value change first became evident in Western societies during the early 1970s, bringing an era of student protests. This cultural revolution was expressed through shifts toward social liberalism in mainstream left-wing political parties, as well as the rise of Green parties, and the mobilization of new social movements advocating environmental protection and fighting climate change; LGBTQ rights to employment in the military, adoption, and same sex marriage; civil rights for minorities like the Black Lives Matters movement; feminist networks with global mobilization on behalf of gender quotas in elected office; anti-domestic violence, and anti-sexual harassment, international assistance for humanitarian disasters and economic development, and human rights around the world. (Norris and Inglehart 2019, pp. 94–95)

The silent revolution challenges profound aspects of humanity's very sense of itself: humanity's relationship to nature, gender, race, and ethnicity. It further challenges the question of what kinds of relationships are possible between humans and nature, men and women, and different races and ethnicities. This global movement opens up a remarkable set of possibilities. In fact, they are so remarkable they threaten to overturn what for many is just the "natural order" of things. It should not surprise us therefore that across the world there has been a pronounced authoritarian backlash from social conservative and fundamentalist movements of all stripes.

Globally, it has led to the repeal of legislation designed to protect the environment, the rights of women and minorities, and is accompanied by a cut to close borders to prevent the entry of immigrants and a rise in xenophobia. Authoritarian leaders tap into the “cultural anxiety” that has emerged for some groups as a result of the silent revolution and its implications, who see that they will no longer be a dominant majority, that their values no longer reflect the nation’s, and consequently feel that this is not their country anymore (Jones et al. 2017).

But even beyond the cultural anxiety, there is what we might call an existential anxiety. *This period of transition, and specifically the silent revolution, poses challenges to the very way human beings understand what it means to be human, their nature, role, and possibilities at a fundamental level.* We will look at three interconnected crises and challenges highlighted by Inglehart and Norris. They are the crises of humanity vis à vis nature, gender, and race and ethnicity.

The implications of the silent revolution involve radical changes to arrangements that have been in place in some form or other for thousands of years. Many people regard these arrangements, such as “traditional” roles for men and women, as “natural” or God-given. As a result, any change for them is not just wrong but an attack on the natural order. Furthermore, while images of the old order are pervasive, *images of a “successful” outcome of the silent revolution are few and far between in the social imaginary.* Even for those who support the silent revolution, it is easier to critique the existing order than to articulate what the new order could be like. Futurist and philosopher Jay Ogilvy has pointed out the absence of scenarios of better futures (as opposed to utopian visions), and also emphasized the need to think about them and generate them in a different way, going beyond the optimism-pessimism clash to a more complex “tragi-comic” view that acknowledges the reality of suffering and the reasons for pessimism, while also retaining the optimism and belief in possibilities that will get one off the couch and allow for hope (Ogilvy 2011).

One key reason why the crisis is so pervasive is that it reflects a certain kind of thinking, a thinking that is reductive and disjunctive. This appears as an exclusive focus on analysis, on isolating variables, and quantification. Interestingly, this kind of thinking was never able to account for creativity. This kind of thinking cannot now envision convincing possibilities for the future because it is precisely the kind of thinking that led to both the successes and now the exhaustion of modernity. For our purposes, this is most notable in the way creativity was conceived and practiced in modernity, because *human creativity is what generates possibilities.*

When the silent revolution is placed in a historical/evolutionary context, it becomes clear that, with some notable exceptions, despite the enormous variety in global cultures, nature, gender, and race have all been marked by relationships of domination – humans over nature, men over women, and “us” versus “them” (Montuori and Conti 1993). The global values change is threatening a status quo that has been in existence for hundreds and even thousands of years. It is threatening core aspects of what is perceived to be human identity, and from within that frame of domination, either A dominates B, or B dominates A. As a result, the change is interpreted as a reversal loss for the dominant groups, so it should perhaps be no surprise then that there is a powerful backlash and extreme polarization. The possibility of mutually beneficial, or what Eisler calls “partnership” relationships, is not entertained as a possibility (Eisler 1987; Eisler and Fry 2019).

Beginning with the human relationship to nature, we see that in the past 2000 years, Judeo-Christian religions have historically preached “man’s” dominion over nature. Particularly since the Industrial Revolution, humanity has gained more and more control over nature. In the process, it has also separated itself from nature, with the result that a vast proportion of human beings in industrialized societies do not see themselves as interconnected and interdependent in their relationship with nature or each other. The current environmental crisis is to a large extent the result of this human dominion, particularly with industrialization. The response to this crisis has led to

the emergence of a powerful environmental movement and proponents of a holistic worldview – a worldview which more than echoes those held by Indigenous peoples all over the world (Capra and Luisi 2014; Wood 2012). The nature of the crisis is such that there have been arguments for drastic changes in consumption and in the economy, changes that would in many ways transform society. Along with this very clear and important economic dimensions, there is also a psychosocial, existential dimension.

At an existential level, the environmental crisis leads to fundamental questions about humanity's relation to nature. There has been a call for a transformation in the relationship between humans and nature. An "ecological self" is not like an individualistic atom, separate from nature, but interconnected and embedded in nature (Macy and Johnstone 2012; Mathews 1991). It is a movement away from an *anthropocentric* view, which holds that there is a clear dividing line between humanity and the rest of nature and establishes human superiority over the rest of the world. In this view, humanity is the principal source of value and meaning in the world, and nature exists for the benefit of humanity (Purser et al. 1995). *Ecocentric* views do not put human beings as the sole source of value and meaning and propose a number of variations on a more interconnected, interdependent self that does not view itself as dominating nature, but in a relationship of partnership (Eisler and Fry 2019). On an existential level, the environmental crisis is also pointing to a new sense of human identity, one that is not separate from Nature, but is more interconnected and interdependent. This view clashes dramatically with the "free market utopia" view that emphasizes the importance of the economy and of independent, unfettered individuals above all. But it should be noted that the full implications of ecocentric views have not been articulated in a modern industrial technological context or extensively applied. This is also the case for the possibilities of partnership relations, whether between humans and nature or men and women. This adds to the uncertainty of the current situation.

The reality of *interconnectedness* and *interdependence*, emphasized by environmentalists

as well as systems and complexity thinkers and Indigenous worldviews, has been made painfully obvious by the pandemic of 2020 (Cajete 2000; Capra and Luisi 2014; Morin 2008). In the United States, this view goes against the historically strong valuing of individualism and the conquest of Nature. Historically, movements such as Romanticism valued Nature in less instrumental ways, and Indigenous societies throughout the world had radically different views that are now being held up as models of harmony with Nature. The interest and appreciation for Indigenous cultures is also leading to a questioning of the alleged cultural superiority of the West, its cultures, and worldview(s). In other words, it is challenging the superiority of the West's identity, and thereby the identity of its people.

The environmental movement is asking human beings in industrialized nations to drastically rethink their relationship to the environment, as well as rethinking a profound aspect of their identity. The gradual shift away from industries that are associated with Industrial Age pollution such as mining show the interconnection between economics and identity and the interconnectedness of the transformation. Certain types of jobs are disappearing because of environmental trends and automation. The disappearance of these jobs also leads to the disappearance of certain kinds of identities – most notably traditionally male, working class jobs not requiring a college education.

The 3 crises are interrelated and turbocharged by current communication technology and the resulting compression of time and space. Vast numbers of traditional working-class jobs disappear because of automation and the green economy. Men without 4-year college degrees are particularly hard-hit. They have lost much of the sense of identity that their jobs provided them, while also seeing no hope for the future. A large number of white men resist so-called green behaviors because they view them as fundamentally "feminine." For them, green and feminine are cognitively linked (Brough et al. 2016). Avoidance of femininity has been found to be an American cultural norm for masculinity. Notions of interconnectedness and interdependence are closely identified with the environmental movement. They go against traditional views of

masculinity in the West, where the stress is more on self-assertion and independence, while being relational is associated with women (Eisler et al. 2016).

Along with the crisis of human identity vis à vis Nature, the second existential and interrelated challenge to traditional identity is gender. Once again, a very long-standing arrangement that dates back at least 2000 years, the subservience of women to men, is being challenged. During that time in the West, but arguably all across the world with some exceptions, men and women have had clearly defined roles and status. Gender identities were identified in opposition to each other. Being a man meant not thinking/feeling/doing like a woman, and vice versa (Eisler and Fry 2019). We saw an example of this oppositional identity in the American cultural value for men of avoidance of femininity. Other cultural norms for men include negativity toward sexual minorities, toughness, dominance, and restrictive emotionality, whereas female cultural norms include relational, put others first, and sweet and nice (Mahalik et al. 2003; Mahalik et al. 2005). To change this fundamental relationship strikes at the very heart of gender identity, of what it means to be a man and what it means to be a woman. The critique of binary views of gender and the increasing emergence of LGBTQ voices have created a range of alternatives that were previously mostly submerged and make gender identity a much more complex phenomenon.

Women are now increasingly becoming breadwinners in the home, going to university in greater numbers than men worldwide (Bilton 2018), as well as taking on roles that were previously reserved exclusively for men. At the same time, men and boys are experiencing a crisis. Roles traditionally associated with men are eroding. Men and boys are unclear about what it means to be a man. Many young men drift aimlessly, and older men are committing suicide, the biggest victims of America's "epidemic of despair" (Case and Deaton 2020; Hymowitz 2011; Rosin 2012; Zimbardo and Coulombe 2016).

A third crisis relates to race and ethnicity. As is the case with environmental and gender issues,

concerns about social justice, ethnic identity, racism, prejudice, and discrimination have become louder and more insistent. The backlash to the silent revolution has focused strongly on nationalism, on us versus them, and on maintaining the inferior status of minorities and those perceived as out-groups by the traditional majority. This has been the case in Europe as well as in the United States, which saw the racist backlash that followed the election of Barack Obama and the candidacy of Hillary Clinton. The symbolism of having the world's most powerful country led by a person of color joined by two women (Nancy Pelosi and Hillary Clinton) was a tipping point for people who rejected the possibilities opened up by the silent revolution.

The post-Obama backlash coincided with the rising numbers of immigrants seeking refuge from war-torn countries and the rejection of immigrants. Martin Luther King's vision was undoubtedly one of interconnectedness (King 1987; Wood 2012), and the silent revolution presents a more globally interconnected, global, cosmopolitan vision. Once again, this trend involves a shift in an arrangement that has been the case for thousands of years: the despicable tendency of one "race" to view itself as superior to others. All three of these crises are based on domination of one over another. And all of them can be used by political leaders to manipulate groups to support specific interests.

The environmental, gender, and race issues at the beginning of the twenty-first century reflect the possibilities of truly transformative changes. They represent a call for changes to relationships and identities that for thousands of years were viewed as "natural," as "just the way things are." "Man" has dominion over Nature, women, and "lesser" races, cultures, and ethnicities. These issues also challenge human possibilities: Can human beings understand themselves as interconnected and interdependent rather than either individualists or collectivists? Can human beings create relations of partnership rather than domination? More broadly, can human beings mobilize their creativity to create these new possibilities, these new ways of being in the world (Montuori and Conti 1993)?

Crisis of Complexity

The Crisis of the Future is also a Crisis of Complexity. It is commonplace to say the world is getting more and more complex. In this context, the word complex may mean a number of things, which usually include not being able to make sense of it. Undoubtedly, the compression of time and space and communication technologies have made a great difference in the last 20 years. As a result, the world is much more interconnected, interdependent, and uncertain, and changing much more rapidly so than ever before. Information can travel over the entire globe instantaneously, and people can do so in 24 h.

With the Internet, human beings have access to more information than ever before. If until the middle of the twentieth century the Encyclopedia Britannica was an acceptable reference point for knowledge, today there is an almost inconceivable proliferation of voices and perspectives, and it seems humans are quite unprepared to deal with this information overload. Information is also manipulated, with websites and bots spreading propaganda and disinformation. As a result, the new term “post-truth” refers to the absence of shared objective criteria for truth.

For Morin, there is something deeply problematic about the very way human beings in the West think, or more broadly, the way they make sense of the world. Morin’s key point here could be summarized by the apocryphal comment, attributed to Albert Einstein, that current problems cannot be solved with the same type of thinking that created them. Is it possible to think about futures and to create better futures with the same way of thinking that informed the modern age? For Morin, the answer is no. What is required is a different way of thinking. Morin refers to it as “complex thought.” While reductionism, disjunction, abstraction, and the quest for certainty have been extremely successful, this “strategy of simplification” has reached its limit. Its limitations have become more obvious in a “networked,” interconnected, interdependent uncertain world

where context and connections matter. Morin writes that

We need a kind of thinking that relinks that which is disjointed and compartmentalized, that respects diversity as it recognizes unity, and that tries to discern interdependencies. We need a radical thinking (which gets to the root of problems), a multi-dimensional thinking, and an organizational or systemic thinking. . . . (Morin and Kern 1999, p. 130)

An increasingly complex – interconnected, interdependent, uncertain, pluralistic world requires a way of thinking that can address this complexity.

The criticism of dominant ways of thinking in the West, and which found support in systems theory and cybernetics, has been that analysis breaks apart complex phenomena in order to understand them, but in the process gives a partial view only, not addressing interconnectedness and emergent properties. This is particularly apparent when addressing living systems. I would add that current problems cannot be solved with the same creativity that created them. What is needed is more complex, contextual creativity.

Complex can be contrasted with simple. As numerous thinkers have pointed out, the human identities we are referring to here, vis à vis Nature, Gender, and Race, are *oppositional identities*, meaning where men define themselves in opposition to women, whites in opposition to blacks, and humans in opposition to Nature (e.g., “he behaved like an animal”) (Wilden 1987). These oppositional identities are relatively “simple,” something most people would view as stereotyped, with clearly defined roles. They can be framed in terms of a simple either/or. One is either male or female, and one dominates the other. From that frame, the transmovement and notions of “fluid” identities are shocking, again, opening up unacceptable possibilities.

The fact that these identities, “human nature,” “gender,” and “race and ethnicity,” are changing means they are becoming more complex, and one example of the greater complexity is gendered identity. Instead of embracing one fixed pole of a

duality, there is a cybernetic relationship between, and transformation of, what were formerly the two choices of male and female. Such cultural norms as toughness for men and sweet and nice for women are traditional cultural ideals, and not just in America. They represent a polarization which drastically limits the full humanity of men and women by reducing what it is possible for a human being to be. Gender roles are, in this sense, a trap, a box. We can see this clearly in such norms as avoidance of femininity and restrictive emotionality (limited emotional range) for men, and relational, sweet and nice, thinness, and put others first for women. The breakdown of the oppositions leads to more complexity and a process of navigating between the range of possibilities. Barron's research showed that creative individuals do not conform to social gender stereotypes (Barron 1972), and beginning with Maslow's early research on self-actualizing, we see psychologically healthy as well as creative individuals embody the resolution of dichotomies that were normally viewed in an either-or frame (e.g., either tough *or* sensitive) (Csikszentmihalyi 1996; Kaufman 2020).

Creativity is the generator of possibilities itself. The creativity of modernity led to an incredible global transformation. But this creativity had certain characteristics which are now quite counterproductive. It was rooted in what Morin calls the paradigm of simplification, it was essentially atomistic, focusing on individuals (the lone genius) and industries at the expense of their context, their environment (Montuori and Purser 1995). It was compartmentalized (e.g., restricted to individual of "genius" and the arts and sciences), not taking account interdependencies or context. The image of the lone genius was very much associated with self-destructiveness, not just with "madness," but with abuse of the body (the "environment" of the "spirit") whether through drugs, drinking, or illness (McMahon 2012). Creativity in industry was decontextualized, and industrial pollution, for instance, was simply dumped into "the environment." The business of business was

business. The disjunctive thinking split humans and nature, and more generally any system from its environment. As a result, the environment was seen as something "other" to humans, and its condition had no implications for humans, with results that are now becoming all too obvious.

This individualistic, atomistic view of creativity is now increasingly being challenged in the creativity research literature (Glăveanu 2017; Glăveanu et al. *in press*; Montuori and Purser 1995). Alternative practices and philosophies, such as regenerative culture and biomimicry, are offering radically new approaches with very different views and relationships between any system and its environment (Benyus 2002; Wahl 2016). For the emerging generations that have grown up in a networked society, interconnectedness is just a fact of life. Generations that have grown up in an interconnected, networked society (Millennials, Generation Z) appear to see creativity differently than baby boomers, viewing it as a more relational, everyday process (Montuori 2011).

A feature of the emerging creativity, expanding on the principle of a more complex creativity (i.e., contextual, collaborative), is an explicit move beyond the realms of art and science, where it clearly resided in modernity, into the realms of *expanding human possibilities*. This includes what Maslow called "self-actualizing creativity," or creativity directed to the process of "self-creation," in order to develop a more complex sense of human identity (Maslow 1959). It also includes *creating* win-win interactions, striving to direct creativity toward making human interactions in an interconnected, interdependent world mutually beneficial, something that becomes an ethical imperative in a time of transition.

The crisis of the future is also a test of human possibilities, of what human beings are capable of. Can human beings learn to know and think in a way that does justice to the interconnectedness, interdependence, and uncertainty in the world? Can human beings learn to create mutually beneficial, win-win relationships? Can human beings

recognize their own creativity and the creativity of nature, and take responsibility for their creations?

Conclusion

The crisis of the future is the result of an interrelated poly-crisis in a time of transition as modernity is dying. Coupled with the effects of technological developments such as the Internet and automation, a movement of global value change, a silent revolution transforming humanity's relationship to nature, as well as gender and racial equality, has led to an authoritarian backlash. Because they touch on core aspects of our identity as human beings, our identity vis á vis nature, gender, and race/ethnicity, the threat posed by these changes has in turn led to great polarization.

The crisis of the future is also a crisis of complexity. The world is more interconnected, interdependent, uncertain, and pluralistic. In order to make sense of it, and in order to comprehend the complexity of emerging post-binary postoppositional identities, a different kind of thinking is needed, which Morin refers to as complex thought. In order to create new worlds, a complex creativity is necessary, one that recognizes human complexity and expands human possibilities, and in which creativity is directed toward the creation of mutual benefit. The crisis of the future is, finally, a test of human possibilities, a test of what human beings are capable of – how they think, create, relate, and act.

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Curiosity

Ilhan Inan

Philosophy, Koç University, Istanbul, Turkey

Abstract

Research on curiosity in the sciences and in philosophy is still in its infancy as indicated by the fact that there are more controversies than there are commonly agreed positions on the topic. This chapter takes up some of the fundamental questions on curiosity and gives a summary of the different views researchers have adopted on these issues. These questions include what curiosity is, how it is aroused, whether it is an aversive state, if it requires awareness of ignorance, how it relates to asking a question, what satisfies it, in what way it is valuable, and whether it can be immoral. Based on these preliminaries, the chapter then discusses the various ways in which being curious relates to different modes of possibility.

Keywords

Curiosity · Wonder · Desire · Drive · Information · Knowledge · Ignorance · Awareness of Ignorance · Reference to the Unknown · Satisfaction · Questions · Asking · Answering · Real Possibility · Epistemic Possibility · Value · Virtue · Morality

What Is Curiosity?

Plato famously said that philosophy starts with *wonder* (thaumazein). The ancient concept of wonder has been associated with awe, amazement, and perplexity, but all of these are passive states that lack a motivational force. The only other component of wonder that has this feature is curiosity, which is the driving force that motivates us to inquire into the unknown and explore reality and our own existence in it. How to define curiosity, or even if it can at all be defined, however, has proved to be very difficult. One major reason for this is the dispute on whether

being curious is a special instance of a more general state. The common trend among philosophers is to take curiosity to be a form of desire. Aristotle's (1924) famous first statement of his *Metaphysics* (350 BC), "All humans, by nature, desire to know," gives us the most popular definition of curiosity (though Aristotle himself does not mention curiosity). David Hume (1986) defined it as "the love of truth," a strong desire which is the source of all our inquiries; Thomas Hobbes (1994) thought of curiosity as "a desire to know why and how" and held that, together with reason, it is what separates us from other animals; Rene Descartes (1989) held that desire is one of the six primitive passions of the soul and defined curiosity as "a desire to understand." Different versions of these desire accounts of curiosity have entered our modern dictionaries as a desire to learn, to inquire, to gain novel experiences, etc. Most psychologists, on the other hand, hold that curiosity is a drive. The pioneering figure in curiosity research, Daniel Berlyne (1954), takes curiosity to be a conflict drive, i.e., the state a being is in when their past experiences are in conflict with their new experiences. Harry Fowler (1965) defines curiosity as a boredom drive, that is, the state a being is in when they lack external stimuli, which exhibits itself in the form of exploratory behavior, motivated by sensation seeking and novelty seeking. One of the most influential figures in contemporary psychology on curiosity research, George Loewenstein (1994), sets this issue aside by arguing that the question of whether curiosity is a primitive drive is one that cannot be answered and is not that important and developed his information-gap theory. On this view, a being becomes curious when they become aware that there is a gap between what they know and what they wish to know. Within the more recent studies in neuroscience, the most common trend is to define curiosity as information seeking (Kidd and Hayden 2015), acknowledging that this is at best a working definition that is vague and perhaps too general. (For interdisciplinary work on curiosity see (Inan et al. 2018; Zurn and Shankar 2020)).

The two most popular accounts of curiosity, as *desire for knowledge* and as *information seeking*, have been challenged by a number of philosophers; Jonathan Kvanvig (2003) argues that animals and young children who do not possess the concept of *knowledge* can still be curious, from which he concludes that curiosity cannot be defined as a desire to know based on the assumption that one cannot desire something they cannot conceptually represent. If this argument is sound, it may also shed doubt on the view that curiosity is information seeking, given that animals and young children may also lack the concept of information. Another argument against both accounts involves cases in which one desires knowledge or seeks information, but yet is not curious (Inan 2012; Schmitt and Lahroodi 2008; Yiğit 2018). One's motivation to seek knowledge or information may be based on practical concerns and not involve an intrinsic interest in the topic, for instance, a student who wishes to acquire knowledge just enough to pass an exam on a topic that he or she has no interest in. On the other side of the coin, there may also be cases in which one acquires knowledge or information that they seek but yet remains curious, or even becomes more curious. The discovery of the existence of black holes, for instance, gave scientists a valuable new piece of information about the universe, which in turn made them more curious about the nature of black holes. Another consideration that may tell against the two accounts involves cases in which one is curious about something but desires not to know it: imagine a jealous husband who is curious about whether his wife is having an affair, but desires not to know it, fearing that the outcome may ruin their relationship (Inan 2012). This gives rise to the idea that curiosity is a primitive mental state that cannot be defined in terms of desires or other emotions.

Despite the lack of consensus on what curiosity is, all researchers seem to agree that normal adults who have mastered a language and have the ability to reflect on what they are ignorant of can become curious and express this in the form of a question which typically causes them to develop an epistemic desire to inquire into the unknown.

How Is Curiosity Aroused?

The common trend among researchers is to take typical cases of curiosity to be aroused by external stimuli. Seeing an unfamiliar object, hearing an unexpected sound, or being asked a novel question could make someone curious, and in such cases, the initial stimulus that arouses curiosity appears to come from the outside and thus may be said to be externally stimulated. This creates a tension for the drive theories of curiosity because primitive drives are typically considered to be internally stimulated: the feeling of hunger or thirst, for instance, is within the organism that motivates it to seek food and water. While on Berlyne's conflict account, unlike other basic drives, curiosity is typically aroused by external stimuli, the boredom account of Fowler takes curiosity to be internally motivated even when external stimuli plays an indirect role, because the feeling of being deprived of novel stimuli is what triggers the whole process initially. The more common approach is to take curiosity to be at times internally stimulated and other times to be externally stimulated (Loewenstein 1994). Such a mixed account could also be applied to cases in which curiosity is stimulated by the asking of a question. One may become curious as a result of hearing or reading a question asked by someone else, in which case curiosity may be taken to be externally stimulated, but one may also formulate a novel question in their mind and make themselves curious, and in such cases, it may well be said that curiosity is internally stimulated. The distinction thus has a bearing on how curiosity relates to creativity; while externally stimulated curiosity does not appear to involve a creative act, cases of internally stimulated curiosity that involve posing a novel question are considered to be a very special case of creativity (Inan 2015).

Is Curiosity Always an Aversive State?

Though there are some fundamental differences, most psychological theories perceive curiosity to be an aversive state, i.e., a negative state a being is in when they are deprived of information,

knowledge, or experience. On this account, being curious is not a pleasurable state, and only its satisfaction is. For this reason, voluntary exposure to curiosity has been associated with risk-taking (Loewenstein 1994). The idea that curiosity is always aversive has been challenged by some philosophers and very recently by some psychologists as well. David Hume (1739) thought of curiosity as a tool by which we fix our attention on our inquiries which at times could be pleasurable. Schmitt and Lahroodi (2008) remarked that curiosity may have intrinsic value in that it may give us pleasure, for instance, when we try to solve a puzzle for joy. Neuroscientific studies indicate that curiosity may be aversive (Jepma et al. 2012) but also at times pleasurable (Kang et al. 2009).

Does Curiosity Require Awareness of Ignorance?

There are important differences between drive-based accounts of curiosity and desire-based ones. Drives are considered to be primitive biological dispositions that need not involve the use of higher-order cognitive faculties, whereas desires in general are considered to be representational mental states. An animal who seeks nutrition, motivated by its hunger drive, does not have to represent in its mind the food it seeks. Similarly if curiosity is motivated by such a primitive drive, it should follow then that the curious being need not have to represent in their mind whatever it is that they seek, be it knowledge, information, or experience. This has led Berlyne to distinguish between two types of curiosity, perceptual and epistemic, where the former is the more primitive kind enjoyed by animals and pre-language children that is aroused by external stimuli coming from an object that is unfamiliar to the curious being. On this account, perceptual curiosity does not require awareness of ignorance. Epistemic curiosity on the other hand can always be put in terms of a question whose answer the curious being wishes to learn and thus requires the agent to come to realize that there is something unknown to them. On Loewenstein's

information-gap theory, all cases of curiosity, whether it is aroused by internal or external stimuli, require the agent to become aware of a certain gap in their knowledge, from which it follows that awareness of ignorance is always a precondition for being curious. Inan (2016, 2020) has argued that in order for a being to become aware of their own ignorance, they need to possess the meta-cognitive skill to mentally represent something as being unknown to them. These accounts have the implication that curiosity is a meta-representational state that may be absent in animals and young children.

How Does Being Curious Relate to Asking a Question?

While Berlyne held that only its more advanced form, that is, epistemic curiosity, requires the asking of a question, Whitcomb (2010), Loewenstein (1994), and Inan (2012) take all instances of curiosity to involve the asking of a question. Both Whitcomb and Inan have argued that the state of curiosity has conceptual content that can always be identified with a question. On the intentional-intensional model developed by Inan (2018), being curious always involves representing an unknown in the mind, which for normal adults who have mastered a language requires the formulation or the grasping of an inostensible concept, i.e., a concept whose object (referent) is represented as being unknown. Identifying the content of the mental state of curiosity with a question allows us to apply the various taxonomies made by philosophers and linguists on the different types of questions to the different types of curiosity. On the most standard distinction, there are the so-called *wh*-questions posed by interrogatives that employ question words such as *who*, *why*, *how*, *which*, *when*, and *where* that ask for an unknown person, a cause, a reason, a time or a duration, a place or a location, etc., giving rise to objectual curiosity, and then, there are the so-called *whether* questions that ask for whether a certain proposition is true or false giving rise to propositional curiosity (Inan 2012, 2014).

In a social context, the asking of a question out of curiosity is a speech act that involves the person asking the question and the one(s) expected to provide an answer. Being curious about something however does not always motivate the asking of a question to others. One can consult a book, an encyclopedia, or a website to find the answer to their question. There are also times when there is no person or text to seek an answer, for instance, when nobody knows the answer to the question. This suggests that there ought to be an extended use of the notion of asking a question, in which the curious person asks a question to herself or himself. This is not a speech act, but a mental act that takes place in the mind of the person (Inan 2012). When one is curious about whether there is intelligent life on other planets and knows that nobody knows the answer, there is a good sense in which they are asking the question to themselves as a private mental act.

What Satisfies Curiosity?

Another controversy concerns the question of what satisfies curiosity; on Loewenstein's information-gap theory, curiosity is sated when the agent acquires the missing information that they seek (though he also uses *knowledge* in place of *information* as well). In a similar vein, Kvanvig (2003) holds that the goal of curiosity is to attain what he calls "perceived truth," from which it follows that novel information that is perceived to be true by the agent is what sates their curiosity. A concern regarding both positions is that information that is attained as a result of being curious need not always be true and, even if true, may not be coming from a reliable source. This raises a further question about whether the satisfaction of curiosity is merely an internal subjective feeling or whether it has externalist conditions. When one asks a question out of curiosity and gets an answer that they believe to be true, their curiosity may end, but the question remains as to whether they have actually satisfied their curiosity, especially if the answer turns out not to be correct. Arguing against the subjectivist account, Whitcomb (2010) holds

that knowledge, and only knowledge, is what satisfies curiosity. Philosophers in general hold that in order for a piece of information that a subject believes to be true to count as knowledge, it must be true (since knowledge cannot be false), and further, the subject must have sufficient evidence or be justified in holding that belief. An intermediary position held by Inan (2012) argues for a mixed account, by distinguishing between a subjective and actual sense of satisfaction. On this view, curiosity may be subjectively satisfied even when it is not actually satisfied. There is then the further question of whether knowledge always satisfies curiosity: Can one remain curious about something they already know? Kvanvig (2003), Schmitt and Lahroodi (2008), and Inan (2012) give various examples of cases in which this could take place. Distinguishing between propositional and objectual curiosity, Inan (2014) argues that propositional knowledge that contains uncertainty and knowledge of an object that is partial leave room for curiosity.

What Is the Value of Curiosity?

There are two different but interrelated ways in which curiosity is said to be valuable. One is the value of a subject's being curious about a particular unknown on a specific occasion, usually identified as state curiosity; the other is the value of being a curious subject in general, in the sense of possessing a certain character trait, generally referred to as trait curiosity. These are dependent values; if it is good to be a curious person in general, this must be because it is good for that person to be curious about certain things in specific contexts. The debate concerning the value of trait curiosity recently emerged in a relatively new field called *virtue epistemology*, a field in which ethics interacts with theory of knowledge. It is inspired by Aristotle's virtue ethics. Aristotle held that a virtue is an excellence in character that one needs to have in order to lead a good life and argued that there are two kinds of virtues: moral virtues, which are those character traits that one ought to possess to be a moral person, and the

other is intellectual virtues (more commonly called "epistemic virtues") which are the character traits required to be a good knower in order to reach wisdom. Nowhere did Aristotle mention curiosity as being an epistemic virtue; contemporary virtue epistemologists have come up with lists of epistemic virtues which usually include traits such as inquisitiveness and open-mindedness, but only a few of them explicitly include curiosity on their list. Miscevic (2016, 2020) argues that curiosity is the basic virtue, underlying all other epistemic virtues, that motivates inquisitiveness in the road to reach truth and knowledge; Schmitt and Lahroodi (2008) hold that curiosity has instrumental value in that it is an original epistemic desire for knowledge that is not for the sake of any practical gains. This raises the question of whether curiosity has merely instrumental value or whether it could at times be intrinsically valuable as well. To test our intuitions on this, Inan (2012) developed a thought experiment, the Utopia Paradox; if knowing is what is intrinsically valuable, then the perfect world would be a place in which we know everything leaving no room for curiosity. If one has the intuition that such a world would not be a pleasant one to live in, leading to boredom, then we may conclude that curiosity also has intrinsic value. Expanding on this idea, Yiğit (2018) holds that the value of being curious and the value of acquiring knowledge (in order to reach understanding of reality) form an "organic unity," that is, the value of the whole exceeds the sum of the values of the parts. Apart from motivating inquiry, Hume (1986) has argued that curiosity has value in that it is an attention fixer, that is, when one is curious they fix their attention on the object of curiosity (the unknown entity); Schmitt and Lahroodi (2008) go even further and argue that the acquired knowledge motivated by curiosity increases the attention of the subject. More recent studies in psychology have confirmed that curiosity is not only an attention fixer, but as a result of this, it enhances and strengthens memory (Kang et al. 2009), indicating that knowledge acquired by curiosity remains in the memory for a longer span of time and is more easily retrieved.

There are various questions concerning the value of curiosity that require further studies. These include what role curiosity plays in inventions and discoveries; whether it is a prerequisite for creativity; how it could motivate us to become aware of our own ignorance and to ask novel questions; the way in which it could increase the depth and breadth of our knowledge; how it could be a remedy for boredom and our fight against dogmatism; how it relates to open-mindedness; what role it plays in our appreciation of the capacity of human intelligence; how it could extend the subject matters we are interested in, whether it is essential for healthy human communication, friendship, and love; ways in which it motivates self-knowledge and self-realization; how it relates to moral and practical deliberation and the exercise of freedom of the will; and how it could provide intellectual change in the right direction.

Can Curiosity Be Immoral?

Medieval philosophers thought of curiosity for the most part to be a sin, so much so that Augustine (401 AD) famously remarked that it is one of the primary sources of human evil. They identified three different ways in which curiosity may be improper; the first concerns *what* one is curious about (i.e., directed toward the wrong piece of knowledge), the second concerns *why* one is curious (i.e., having the wrong kind of motive), and the third concerns *how* one becomes curious or tries to satisfy their curiosity (i.e., employing the wrong method) (Dunnington 2018). Examples of the first kind include being curious about unknowable things, trivial matters, issues that distract one from their duties, and concerns that are debasing or not edifying; curiosity based on an improper motive involves cases in which one seeks knowledge for pride or to use it for evil purposes or that distracts their attention from God; the third category of improper curiosity that employs the wrong method includes cases in which it is haphazard and not organized or appeals to forbidden sources. From a modern perspective, some of these cases are no longer considered to be improper or

immoral by many, especially from a secular point of view.

One should approach all these arguments with some caution for two reasons. One is that there is an important distinction between being curious on the one hand and acting upon your curiosity on the other. For instance, being curious about others is typically considered to be immoral when it involves infringement of privacy, but for that to be the case, it seems that the curious person should have acted upon their curiosity. It may thus be that what is immoral is the performed action and not the mental state of curiosity. The second issue concerns the issue of whether being curious is voluntary. When one becomes curious as a result of internal or external stimuli, it may be that this is not something they intentionally choose to do with their free will. If curiosity is a mental state that emerges involuntarily, as is the case for most of our beliefs and desires, then being curious as a mental state cannot be the object of moral judgment. As the famous slogan goes, *ought implies can*, that is, one can only be praised or blamed for acts that they can do or avoid to do. In many of these cases of improper curiosity, it may be that what is immoral is not the state of curiosity per se, but one's actions that are motivated by it which in normal circumstances are considered to be voluntary acts.

How Does Curiosity Relate to What Is Possible?

Humans have the capacity to think of not only what is actual but also what is possible. The ability to represent possibilities underlies our aptitude for curiosity. In order to be curious about whether there is life on other planets, one must be able to represent in their minds two incompatible possibilities, only one of which is actual. For such empirical matters, the mode of possibility that we appeal to may be said to be real possibility, assuming that it is physically possible for there to be life or no life on other planets. But human curiosity is not limited to this mode of possibility. One can be curious about whether an unproven mathematical hypothesis, such as Goldbach's

conjecture, is true or false, and in such a case, not each option has real possibility, given that if the hypothesis is true, then it being false is not mathematically or even logically possible. Here, the mode of possibility is epistemic in that both the possibility of the hypothesis being true and being false are epistemically open to the agent since they do not know which is correct.

There are other ways in which curiosity relates to what is possible as well as what is impossible. First involves the issue of the limits of curiosity: what a person can be curious about is essentially determined by what is possible for them to ask (Inan 2012). Given the recursive and compositional structure of a natural language, there are infinitely many possible questions that can be formulated by using its finite vocabulary of words. A speaker of a language knows some of those words, but not all, and every known word corresponds to a concept in their mind. These known words constitute a part of the idiolect of that person; the richer it is, the more questions they can ask. In other words, the number of inostensible concepts that they can grasp is determined by the concepts of their idiolect. A person who has the concepts of *the solar system*, *planet*, *moon*, *number*, and *most* may bring them together by utilizing rules of syntax to formulate the question “which planet in the solar system has the most number of moons?” and then by an act of epistemic self-reflection, they may come to realize that they do not know the answer, and if they have an interest in the topic, this may arouse their curiosity. A member of a community that has a primitive language that does not contain such concepts cannot construct such a question and thus cannot become curious about this, nor can a child that has started speaking a language but has not acquired all these concepts yet.

Another way in which curiosity relates to the possible concerns not the questions they can ask, but the possible answers they can conceptualize of a particular question that they can ask. The person who is curious about which planet in the solar system has the most number of moons may narrow the range of the possible answers to their question to, say, two options: it is either Jupiter or Saturn. These are two possible answers, and

only one of them is correct. The ability to conceptualize possible answers to a question asked out of curiosity is what allows a being to formulate hypotheses which in turn may arouse further curiosities that motivate further inquiries. Note that being curious which planet has the most number of moons in the solar system is different from being curious as to whether Saturn is that planet. This is one way in which curiosity can be tenacious; that is, a question asked out of curiosity may give rise to further questions as long as it is possible for the curious person to formulate hypotheses that are the possible answers to the original question. Before the discovery of Saturn, though it may have been possible for people to be curious about which planet has the most number of moons, it was not possible for them to be curious about whether Saturn is that planet, given that they did not have the means to refer to it in their idiolect.

Curiosity interacts not only with what is possible in these ways but also with what is impossible as well. One way in which this happens is when one asks an answerable question that leads to insatiable curiosity. This is the case when one has the means to conceptualize an unknown through the asking of a question, but it is impossible to know the answer, either for the subject herself or for all humans. Medieval thinkers thought of such instances of curiosity as being improper and even as a sin, arguing that one ought not seek knowledge that is beyond their reach. What tells against this is that in order to determine that a question is unanswerable, one should first ask that question, so it seems that being curious about what turns out to be unknowable is a good way in which one discovers that that aspect of reality is unknowable. Curiosity about some future state of the world may be such a case. It may turn out that some events are not governed by deterministic laws, which makes the future open; on such a view, there are various possible futures compatible with the state of the world now, and there is simply no fact of the matter as to which one of those possibilities will turn out to be an actual state of the world in the future. This may be the case if there is some indeterminacy at the quantum level or if humans have a free will

that is incompatible with determinism. In an indeterministic world as such, it is impossible to answer some questions about the future, though some of these questions arose the curiosity of many.

Another way in which a question is unanswerable in a more qualified sense is when the question is based on a mistaken presupposition. Before Euclid gave his elegant proof that there are infinitely many primes, it must have been natural for mathematicians to be curious about what the largest prime number is. It was well known then that the frequency of prime numbers in a given range decreases as the numbers go up. The question “what is the largest prime number?” presupposes that such a number exists, and in this sense, the question cannot be answered, at least not in the ordinary way. If one does not know that the presupposition of a question is mistaken, one can still be curious about it. And this is definitely not a waste of time, nor is it improper, or a sin, for such instances of curiosity allow us to discover that the question is unanswerable which indicates progress in our knowledge (Inan 2012).

The way in which being curious relates to the conceptualization of what is possible may also manifest itself in certain forms of creativity (see also “► Inspiration”). A designer, an inventor, or an artist typically conceptualizes the entity they wish to create, which is initially merely possible and not actual. If a case can be made that the creator may in fact be curious about the end product they wish to create (Inan 2015), then it should follow that this very special form of curiosity requires the conceptualization of the possible.

Cross-References

- Awe
- Creativity
- Curiosity
- Ignorance
- Inspiration
- Risk
- Uncertainty

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D

Daydreaming

Tania Zittoun and Martina Cabra
Institute of Psychology and Education, University
of Neuchâtel, Neuchâtel, Switzerland

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Abstract

Daydreaming can be defined as the process by which we partly or fully decouple from what seems to be one's current activity in the world. It usually designates "anything one may be thinking about that does not pertain to the task in which one is currently involved" (Pereira and Diriwächter, 2008). Occurring within our flow of consciousness, it entails fantasy or a form of diurnal dreaming. Daydreaming can be more or less deliberate, have more or less clear goals, be more or less structured, and have diverse types of outcomes. Authors usually distinguish daydreams that may enrich people's relation to themselves, or their relation to the world, from those which seem not to enrich experiences. Most authors admit that daydreaming participates to our capacity to deal with our experiences and opens up new possibilities.

Introduction

Daydreaming has long been identified as a form of dream with open eyes, a way of being lost in fancy. In common sense as well as in psychology, daydreaming can be seen more or less positively: either as a very positive and constructive process, as a form of harmless distraction, or as loss of time or even a negative process. It follows that daydreaming can be seen as more or less connected to the possible: daydreaming can be seen as a process that leads to the creation of new possibilities in life, or on the contrary, as something that prevents or impedes our engagement to the possible. Interestingly, these positions partake to different psychological traditions: psychoanalysis on the one hand, and on the other, more conventional psychology, connected by the pivotal work of Jerome L. Singer. This text has two main parts. In the first part, we review studies on daydreaming by highlighting their relation to the possible. We thus distinguish authors for whom daydreaming is a usual activity of mind

which is enabling the possible; others who believe that daydreaming can even expand the possible; authors for whom daydreaming constrains the possible; and authors working with a non-processual model of mind for whom daydreaming is an obstacle of the possible. In a second part, we build on this work and first adopt an analytical stance to distinguish content, form, and function of daydreaming; we finally define a sociocultural approach to daydreaming, according to which daydreaming is a semiotic process building on past internalized experiences, reconfigured in new ways, thus expanding the possible.

Reviewing Daydreaming

Daydreaming as Enabling the Possible in Psychoanalysis

Psychoanalysis is focused on psychological processes by which “the obscure ways of [the] unconscious” can be made clear (Roudinesco and Plon 2007, p. 822). Psychoanalysis is a theory that assumes our lives are marked by the work of unconscious processes and highlights their affective nature; in addition it is an approach that assumes that semiotic processes – through language or other signs – can give form to our experience. In that domain, the notion of daydreaming is closely linked to those of fantasy, phantasy, dreaming, mind-wandering, and imagination (Laplanche and Pontalis 2007). For Freud, the creator of psychoanalysis, daydreams or phantasies are made of some traces of experiences, now combined in new ways:

Phantasies arise from an unconscious combination, in accordance with certain trends, of things experienced and heard. (...) Phantasies are constructed by a process of amalgamation and distortion analogous to the decomposition of a chemical body, which is compounded with another one. For the first sort of distortion consists in a falsification of memory by a process of fragmentation in which chronological relations in particular are neglected. (...) A fragment of the visual scene is then joined up with a fragment of the auditory one and made up into the phantasy, while the fragment left over is linked up with something else. In this way it is made impossible to trace up an earlier connection. (Freud 1966, p. 252)

Other authors, such as Winnicott, Lacan, and Klein agree upon the experiential component in defining daydream’s content. There are bits of previous experience that are recomposed and constitute the feelings and scenarios delineated by daydreaming.

Freud also considered daydream as a natural and usual process, in which we are daily engaged. It is a spontaneous activity, as is children’s playing, and it is actually a continuation of children’s play:

As people grow up, then, they cease to play, and they seem to give up the yield of pleasure which they gained from playing. But whoever understands the human mind knows that hardly anything is harder for a man than to give up a pleasure which he has once experienced. Actually, we can never give anything up; we only exchange one thing for another. What appears to be a renunciation is really the formation of a substitute or surrogate. In the same way, the growing child, when he stops playing, gives up nothing but the link with real objects; instead of playing, he now phantasies. He builds castles in the air and creates what are called day-dreams. I believe that most people construct phantasies at times in their lives. This is a fact which has long been overlooked and whose importance has therefore not been sufficiently appreciated. (Freud 1959, p. 422)

Daydreaming is thus a common and usual process. It is often not taken very seriously, unless it is undertaken by artists, who cultivate their daydreaming capacity and who, thanks to their technique and talent, turn them into new and sharable cultural forms.

Most psychoanalytical traditions that developed after Freud admit with him that daydreaming is a key activity of our mind. Daydreaming participates to the processes by which mind elaborates or integrates more or less affectively charged experiences, and makes them acceptable or meaningful for the person. Daydream transforms experience by the process of decomposition of traces of past experience (personal, but also cultural, relational, etc.) and their reorganization in new psychological experiences. The processes by which these recompositions occur are those described by Freud in his analysis of dreaming and include displacement (of affects and content from semiotic forms), figuration (of abstract ideas

into concrete things), and crystallization (of complex webs of meaning and affects into specific patterns) (Freud 2001a, b). Daydreaming can take many forms, which are more or less conscious and more or less deliberate; their affective tonality can be positive or negative. This has been further explored by authors after Freud. Lacan shows that fantasies can have a defensive function and are the byproduct of a frustration of some form of satisfaction in daily life. They hence represent some psychic activity, they can be reflected upon, and they can thus give rise to new form of activity (Lacan 1982; Roudinesco and Plon 2007, p. 287). Piera Aulagnier, who followed some of Lacan's work, considered fantasy as the result of primary processes and thus as the product of a pursuit of pleasure (Castoriadis-Aulagnier 1975, p. 26). These authors agree upon the function of daydreaming: it thus constitutes a form of elaboration or transformation of affects, be they pleasurable, paradoxical, or unpleasant.

For psychoanalytically inclined authors, such as Freud, Winnicott, Lacan, and many others, daydreams can thus either simply accompany one's flow of thought or activities, and be free floating and associative, or can take the shape of systematic and deliberated scenario. These can be negative, as when some anxiety accompanies a travel to a new place, or positive, as when we anticipate with excitement what will be. Yet, the paradoxical and ambivalent nature of human experience – the fact that we can very strongly desire certain things and yet loath their very thought at the same time – dissolves some of the boundaries of this taxonomic classification.

Altogether, daydreaming is thus more generally seen as oriented toward the possible: some daydreams are oriented toward the future and thus preparing it; most daydreams engage, to different degree, the elaboration and therefore transformation of experience, which could be otherwise preventing activity; it thus enables the person to welcome what is to come and engage in new experiences.

Within that tradition, only few authors, such as Winnicott or Tisseron, consider that some forms of daydreaming are not linked to the generation of the possible those that engage a compulsive,

dissociated, and defensive semiotic process. They are not related to the person's affects or in relation to the world:

The patient may sit in her room and while doing nothing at all except breathe she has (in her fantasy) painted a picture, or she has done an interesting piece of work in her job, or she has been in a country walk; but from the observer's point of view, nothing has happened. In fact, nothing is happening because of the fact that in this dissociated state so much is happening. On the other hand, she may be sitting in her room thinking of tomorrow's job and making plans, or thinking about her holiday, and this may be an imaginative exploration of the world and of the place where dream and life are the same thing. (Winnicott 2001, p. 27)

Similarly, Tisseron considers that we can enter in a form of empty fantasy activity – empty in the sense that it does not participate in semiotic elaboration, for instance, as when we play repetitive online game without emotional participation (Tisseron 2012). In these examples, the authors distinguish two functions of daydreaming: that of the elaboration of experience and another compulsive, dissociative, yet defensive, which would not appear to participate in making life in the world possible for that person.

Daydreaming as Expanding the Possible: Jerome Singer's Legacy

In psychology, the first systematic exploration of daydreaming was made by Jerome L. Singer, who in 1975, dedicated a whole monograph to the topic which became foundational for the study of daydreaming. The book, reedited in 2014, opened with a phenomenological exploration of the author's own daydream, which consisted of a complex scenario, built over the years as self-standing world, and that he could summon at will (Singer 2014, Chapter 1). Trained as psychotherapist and working as experimental psychologist, he later developed systematic studies of daydreaming, including collecting testimonies in the media and the arts, observation, introspection, projective tests, questionnaires, and scales. Vast cohorts of college students in the 50s completed his questionnaires, including open questions and scales based for some part on theories of personality then in fashion. Most people did report

daydreaming, mainly visuals, and often before falling asleep. Regarding content, Singer writes:

we see that most people's daydream consist of projections in the future of the fairly practical immediate concerns they have in their daily life. This daydreaming cannot be equated with specifically wish-fulfilment ideation. It appears more appropriate to look upon the content for most of our sample as reflecting attempts at exploring the future. It is a form, of "trial action" in which individuals review a variety of alternatives, not by any means always involving satisfactory outcomes for themselves. (Singer 2014, p. 55)

Along the lines of psychoanalytic authors, Singer considers the remainder of daily life experiences as making up the content of daydreams. In terms of its function, he assumes a Jamesian position, which suggests that daydreaming is always part of our stream of consciousness and part of our handling the extreme complexity of the world in which we live. Experimental testing suggests that the less we are exposed to, or focused on, external stimuli, the more we can be attentive to our daydreaming. In other words, daydream is a regular feature of our waking life; we simply do not pay enough attention to it.

Through Singer and his colleagues' studies, contents of daydreams appeared to be about people, relations, daily incidents, food, sport, sex, travels, and mostly part of daily life concerns. Singer and colleagues also looked for age and sociodemographic variables explaining variations in daydreaming and, through scales evaluated by people, for clusters of daydreaming through statistical analysis. In terms of its affective nature, Singer indeed identified:

1. "Anxious distractibility in daydreaming": floating and worrisome daydreaming "is not a useful resource and [the persons] take little pleasure in it" (Singer 2014, p. 68).
2. "Guilty, negatively toned emotional daydream": these are the daydreams of people with high aspiration and self-doubts and ethical standards.
3. "Positive vivid daydreaming": this is "characterised by an enjoyment of daydreaming and its anticipation of the future and for self-distraction without any pathological implications" (Singer 2014, p. 70).

For Singer, it is then possible to identify two types of acceptance of inner life, one as more flexible, nonconforming, and interested in people, and the other as a form of curiosity toward the natural and physical world.

Finally, regarding the function of daydreaming, after reviewing the explanations available at his time, mainly psychoanalysis and cognitive approaches, Singer had a very modulated view: for him, the attention we give to daydreams and the way we handle our lives result from complex arrangements – biographical, educational, relational, experiential, etc. – and so daydreaming can have very different functions. Minimally, it is a way to enrich our experience: some are wishful explorations, some divert us from anger and frustrations, some provide us with distractions from boredom, and in many cases they are "rehearsals for future actions. They may suggest new and alternative ways of dealing with situations (. . .). They can encourage us to try new kinds of experiences, or at least to look for ways of reaching some compromise approach to these wishes" (Singer 2014, pp. 118–119). And indeed, for Singer, daydreaming is developed over the life span and could be supported through psychotherapy to enrich people's lives.

By all accounts, then, Jerome Singer's approach to daydreaming was open and generous; for him, daydreaming is a vital part of our experience, on the fringe of our consciousness, and plays a key function in enlarging possibilities in our lives, exploring them, testing them, or simply playing with them, so as to move on. Daydreaming is deeply related to the possible. In his own work, Singer moved to study of the development play and imagination, even into electronic age (Singer and Singer 1992, 2005, 2013).

Authors referring to Singer often work with his typology of daydreams and correlate positive vs. negative daydreams with different other variables or psychological functions. For instance, authors have found positive correlations between dysphonic daydreaming and sleep disturbance (Starker and Hasenfeld 1976) and negative correlations between positive daydreaming and sleep disturbances. Others, such as Morley (Morley

1998), propose a phenomenological approach to daydreaming, which critically addresses Singer's emphasis on content and, using the metaphor of daydream as theatre, distinguishes daydream as lack versus as fulfilment. However, it seems that such approach transforms a model focused on processes (daydreaming as understood by Singer, inspired by psychoanalysis) into a model of types (of positive vs. negative daydreaming, wish fulfilment vs. lack); thus theorized, daydreaming loses its relation to the possible, as we will now see.

Daydreaming as Constraining the Possible: Unconscious Phantasms and Private Theatre

Some approaches in psychoanalysis and psychology assume that the deeper structures or processes of the psyche can constrain the richness or form that a given person's daydream can take.

On the psychoanalytical side, many authors distinguish the possibly conscious or quasi-conscious nature of some of our fantasies, which are accessible to introspection and language, from other, deeper unconscious phantasies or phantasms. Grounding such distinction, Melanie Klein, a psychoanalyst who developed her understanding on the basis of the observation of very young infants, considers that daydreams find their form in deep and unconscious phantasies (Klein 1936). Because of their organizational force, these phantasies constrain the daydreams a person can engage in.

In a similar vein, Lacan distinguishes the imaginary concept of fantasy from that of phantasm (Lacan 1957). This notion conveys the idea that there is a form of dramatization of everyday life; the form that this drama may adopt for each person is depending on their phantasm (Lacan 1982; Roudinesco and Plon 2007, p. 287). In a slightly different manner, phenomenological approaches find a form of universal grounding in daydreaming; Morley thus proposes that daydreaming "reveals the meaning of moods and emotions as dramatic scenarios in a manner reminiscent of the Greek work theatron" (Morley 1998, p. 132). There is here a parallel between staging and daydreaming in Morley and the dramatic aspect of daydreaming developed by Freud, Klein, and Lacan, among others (Roudinesco and Plon 2007). Such approaches theorize the limits of

daydreaming or the potential constraining that it may entail. They acknowledge, in a more or less rigid way, that the grounding of psyche establishes some form of fluid boundary for otherwise potentially infinite combinations.

Daydreaming as Impossibility

The most recent research on daydreaming has taken the label of mind-wandering, and it may or may not refer to Singer's proposition. In this psychology, the focus is not on processes of thinking but rather on outcomes. Affects are not theorized much, yet are assessed (as "satisfaction" or "well-being"); meaning or semiosis is not seen as relevant. These are considered in link to activities positively evaluated by the researcher – mainly, work (or learning). For most of this literature, daydream is seen as nuisance to the valued activity (i.e., work): mind-wandering is a way to be off-task and is usually considered as a loss of time. For instance, in a paper provocatively called "a wandering mind is an unhappy mind," Killingsworth and Gilbert (2010) analyzed information obtained through a phone-based application about 2500 US person's activities, state of mind, and mood. Their results showed that mind-wandering occurs in 46.9% of the cases; they then add that although people

were more likely to wander to pleasant topics (42.5% of samples) than to unpleasant topics (26.5% of samples), or neutral topics (31% of samples), people were no happier when thinking about pleasant topics than about their current activity ($b = -0.52$, not significant) and were considerably unhappier when thinking about neutral topics ($b = -7.2$, $P < 0.001$) or unpleasant topics ($b = -23.9$, $P < 0.001$) than about their current activity. (Killingsworth and Gilbert 2010, p. 932)

This type of research, content-free and decontextualized, is however hard to interpret. In any case, for these authors, mind-wandering consists in a loss of cognitive resources which would be better invested in something more efficient; it is thus seen as the result of a "cognitive control failure" (McMillan et al. 2013 for a review). The very fact of not being able to control their thoughts would be what makes people unhappy (Stawarczyk et al. 2012). For such tradition, daydream harms or damages activities in which people should be fully involved; it is assessed

negatively and seen as limiting the possible – a possible achieved through goal-oriented work.

Of course, one could question whether daydreaming and mind-wandering really entail the same phenomena. Newby-Clark and Thavendran (2018) suggest, in their review of the literature, that the lack of definition of these terms has also obscured the fact that they usually are operationalized in different ways. They propose to define daydreaming as “imagining events.” This enables them to consider mind-wandering as a different phenomenon: it is just “off task” and passing from thought to thought, while daydreaming would thus be intentional and have an explicit object (i.e., imagining an event) (Newby-Clark and Thavendran 2018). This, again, creates a normative division within variation of daydreaming (goal orientation is good, off-task is bad) and loses the complexity and variation of daydreaming described by psychoanalysts and by Singer.

Expanding Daydream

Analyzing Daydreaming

After this review of approaches, we now propose to decompose their claims into four questions: (i) What is daydreaming made of, which refers to its content; (ii) what forms it can adopt; (iii) what shapes these forms; and (iv) what its function is.

What is daydreaming made of? Most authors agree on the fact that dreaming draws upon past experiences, which in mind, can be recombined in novel forms.

What forms can it adopt? There is much less consensus about the form of daydream. For the most comprehensive understandings, such as Singer's, daydreaming can take forms ranging from a general feeling to a fully formed scenario. A diffuse feeling of comfort may accompany the experience of suddenly hearing a long-lost song; that daydream may have no specific content, simply reenacting the feeling of safety that accompanied us the first time in which we heard that song. It can also take the form of a fully formed scenario; Singer thus described his former daydreams consisting of a whole season of football matches (Singer 2014); or one may engage in

such daydream meeting an old lover by chance in an airport.

What shapes these forms? The form of daydream can be shaped by different forces and material. First, daydream may be partly shaped by the actual conditions of daydreaming; the football match may arise while watching one's son play football, or the hours of boredom due to a missed flight may trigger the romantic daydream. Second, for psychoanalysts, these daydreams are shaped by deeper psychic organization or phantasm. Third, people's daydreams are not only made by the content of their past experience, these also shape the form of these contents. Classical studies suggest that people daydream different shapes when looking at clouds, depending on their socio-cultural experiences (Bartlett 1916, 1928); similarly, the material arrangement in which people move and live their lives produce patterns that can also shape daydreaming (Valsiner 2019).

What are the functions of daydreaming? As we have seen, the literature considers functions either in terms of outcome or in terms of process. In terms of outcome, daydreaming can be seen as constructive or dysphoric, positive or negative, and useful or useless. There is thus a difficult opposition between positive and negative affective qualities, not accounting for the paradoxical or contradictory nature of many of our desires and thoughts. In terms of process, daydream can be seen as elaboration of experience, which includes both the elaboration of affect through semiotic processes, and the production of novel forms based on such semiotic elaboration (i.e., have a new unexpected daydream). The process can have various degrees of relation to external stimuli – complete decoupling and intermediate or accompanied decoupling. We can then elaborate the past, for instance, going over a disagreement we had with a friend, reproducing what we replied and exploring alternative ways in which we could have engaged. This may give us the pleasure that that situation didn't have or simply calm us by making sense of what happened. In the present, daydreaming may allow us to do something about the boredom we are feeling at the airport because of a delayed flight. And regarding the future, strolling through shops may trigger some ideas about a next trip to Sweden. Daydreaming can

thus be seen as participating to the elaboration of past, present, and future experiences.

Reframing Daydream and the Possible

A sociocultural psychological perspective on daydreaming enables us to integrate the propositions of psychoanalysis with Singer's constructive view. In effect, current cultural psychology has a processual and developmental approach to mind and considers the psyche and human experience as semiotically, culturally mediated. It sees mind as elaborating affective experience through signs, as well as being able to generate affective experience through signs; these results from our experience of interacting with other and the world they inhabit (Vygotsky 1975). Experiences can thus be apprehended in more or less concrete ways and more or less conscious ways (Salvatore and Zittoun 2011; Valsiner 2000, 2014, 2019).

For sociocultural psychology, human experience is future-oriented; through play, perspective taking, imagination, fabulation, and fiction, humans can relive their pasts, explore alternatives, and, especially, generate their future (Gillespie 2005, 2006; Stenner 2018; Vygotsky 1994). Daydreaming is thus understood as one variation of these semiotically mediated processes, building on past internalized experiences, now reconfigured in new ways, often through creative synthesis (Vygotsky 1971), and build new possibilities. From such perspective, daydreaming, like imagination, is not mere repetition of past traces; these processes rather participate to the expansion of experience (Pelaprat and Cole 2011; Zittoun 2019; Zittoun and Gillespie 2016). Both daydreaming and imagination demand that we decouple or disengage from the flow of common affairs, situated in the socially shared reality, to engage in what can be called distal experiences that escape the social and physical laws of that reality. Given its past theoretical anchorage, the notion of daydreaming emphasizes, more than that of imagination, the pervasive, background presence of the phenomena, as well as its roots or extensions in unconscious and affective activities, closer to dreams. However, many of the forms of daydreams documented by the literature, whether classical or more recent (Pereira and

Diriwächter 2008; Singer 1977), could be also considered as imagination.

In our proposition, daydreaming is seen as elaboration of experience and, more so, as a form of expansion of the possible. It can take the form of simply allowing us to leave the house to go to work or take the obvious form of coming up with a new idea or devising an unthought of solution. In any case, as a semiotic process part of the elaboration of experience, it can retrospectively participate in the sense-making of experience, to re-present experiences which have been so far not enough semiotically elaborated, presently mediate the relation to the real, or in a future-oriented manner, and pave the way to experiences to come. Daydreaming is thus part of creating the possible world in which we live.

Cross-References

- [Anticipation](#)
- [Dreams](#)
- [Futures Studies](#)
- [Imagination](#)
- [Mind Wandering](#)

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Decision-Making

Michał Białek¹, Artur Domurat² and
Ethan A. Meyers³

¹University of Wrocław, Wrocław, Poland

²Kozminski University, Warsaw, Poland

³University of Waterloo, Waterloo, ON, Canada

Abstract

In this chapter, the way people consider possibilities in decision making are unpacked and explored. It begins by outlining the concept of rational choice – what a decision maker *ought* to choose. Specifically, it discusses how, for a

given decision, a rational choice can (or cannot) be determined. Whether people often make rational choices, and what can be done to shift people toward making rational choices more often. The chapter also portrays decision making in a human light: explaining how defining a rational choice and the decision process are constrained by human biology and behavior. The steps required to make a decision are delineated, and at each step, it is briefly discussed when and how people can diverge from what they *ought* to be doing or choosing. The chapter closes by discussing how people evaluate decisions after they have made them and the factors that affect the evaluation.

Keywords

Decision making · Rationality axioms · Bounded rationality · Heuristics and biases · Risk · Uncertainty

What Is Decision-Making?

The goal of this chapter is to introduce readers to the science of decision-making, with special focus on how possibilities are considered, compared and ultimately selected. It aims to highlight how for real life decisions an abundance of possibilities is dealt with by a decision-maker whose ability to process information is severely limited.

According to classical dictionaries, a decision is the act or a process of deciding, a determination arrived at after some consideration (Decision 2020) or a choice or judgment that one makes after a period of discussion or thought (Mayor 2011). The interdisciplinary science (Hardman 2009) that focuses on how decision-makers (people, organisms, machines) choose among possible options, based on their goals and beliefs (Hastie 2001) is Judgment and Decision Making, often shortened to JDM. The research of JDM can be broadly categorized into three separate streams. One is formal Normative Analysis that indicates how a decision *should* be made. For a given situation, this

analysis outputs what is termed the “rational” choice; the choice that a decision-maker who finds themselves in that situation *ought* to make. A second stream is Descriptive Analysis that shows how decisions are *actually made*. For a given situation, this analysis examines the choices people make and tries to explain the potential discrepancies between the choices made by individuals and the choice recommended by the Normative Analysis. A third stream of analysis focuses on Prescriptive Interventions to aid people to make better choices among possible solutions and improve their decision-making, also known as debiasing (Fischhoff 2012; Larrick 2004). Often, this stream of analysis tries to shift the responding of individuals (as indicated by the Descriptive Analysis) to better match the choice outputted by the Normative Analysis.

This chapter will explore the three streams of JDM research. It will examine across various situations how people should decide, how they tend to decide, and what can be done to resolve any discrepancies that may arise. In order to better understand decision-making, this chapter will begin by introducing the important concepts of rationality, cognitive limitations of the decision-maker, and cognitive miserliness.

Rationality, Cognitive Limitations and Cognitive Miserliness

Rationality

The core point of the Normative Analysis is to uncover which decision option a “rational” decision-maker should choose in a given scenario. Here, the notion of rationality refers to deciding in a way that is sanctioned by the axioms or rules proposed by normative theories.

Normative Analysis provides the framework for how decision-makers can make rational choices in accordance with a goal. Often, the proposed goal of the individual is to maximize their utility – the quantifiable benefit that results from actions (Begg et al. 2014). According to Normative Analysis then, a decision-maker

ought to always choose a possibility that will bring them the most benefit. In order to do this, an agent should follow rules that are structured in a way that, if violated, make such utility-maximizing choice-behavior nearly impossible in the long run. These rules are called axioms and four underlie standard utility theories: Completeness, Transitivity, Independence of Irrelevant Alternatives, and Continuity (Von Neumann and Morgenstern 1944). Axioms define relationships between preferences. For example, if at an ice cream store an individual chooses to purchase a scoop of strawberry instead of a scoop of vanilla, they are said to prefer strawberry over vanilla. Preferences are Complete when for any pair of alternatives, a decision-maker “knows what they want”. For instance, the individual knows whether they prefer strawberry to vanilla, or vanilla to strawberry, or if they are indifferent between them. Preferences are Transitive when the individual prefers strawberry to vanilla, and vanilla to chocolate, and because they prefer strawberry to vanilla to chocolate, they necessarily prefer strawberry to chocolate (i.e., if given the choice between strawberry or chocolate, that person would pick strawberry). Preferences are Independent when introducing an option like chocolate does not change preference between options strawberry and vanilla (i.e., the person will choose strawberry over vanilla with or without the third option of chocolate present). Finally, Continuity means that for any three alternatives with preferences as outlined above, there exists a unique probability p where a lottery with two outcomes: obtaining \$10 with probability p , or obtaining 0 with probability $1-p$, is equivalent to obtaining some amount of money for sure. This final axiom will receive more attention in subsequent sections.

Cognitive Limitations

If the goal of the decision-making process is to be normatively rational (i.e., to find the *best* solution), then even trivial decisions (i.e., “which flavor of ice cream should I order?”) can be a daunting task requiring an abundance of cognitive resources. Yet in practice, individuals handle the decision-making process with ease and most decisions are made quickly and with little effort. One

reason for this principle-practice discrepancy is the inherent limit to people’s processing capacity. Simply put, people cannot process an infinite amount of information, and therefore have to restrict the amount of information that is to be processed before making any sort of decision. Although across simple and well-defined situations people may indeed maximize their utility, they often deal with nebulous problems where maximizing utility is practically unachievable because of task complexity. In such cases people settle for satisfactory solutions (termed *bounded rationality*) by forgoing expending a large quantity of cognitive resources to obtain the highest possible utility for a choice that gamers a lot of utility for little cognitive cost. Naturally, determining exactly how much utility is “good enough” (and at what cost) leaves plenty of room for erroneous decision-making processes to enter.

The time and effort required to obtain and process information must affect how rationality is defined in realistic situations. As human beings are not hyper-powerful computers capable of processing infinite information, maximizing utility may be an unachievable goal. An offered replacement to the idea of maximizing utility is the level of aspiration: an ambition of the decision-maker to satisfy their goals in a sufficient way (Simon 1959). Simply put, one does not have to choose the ice cream flavor that will necessarily bring them the most utility, but merely a flavor that they will enjoy. Therefore, rationality can be defined at least in two ways. Indeed, another approach defines rationality as deciding in a way that is generally reliable and efficient for achieving one’s goals (Evans and Over 1996). The key message of this section is that human beings are necessarily imperfect, and as such, prescriptions of rationality that necessitate human perfection may not be appropriate (Todd and Gigerenzer 2012). In some conditions, the biased strategy is well-calibrated, and using normatively incorrect methods of deciding is practically equivalent to the use of normatively appropriate strategy (Domurat et al. 2015). In some other conditions, these “mental shortcuts” result in severe decision errors. In the next section, the limitations of human processing power are explored.

Cognitive Miserliness

For most decisions an individual will make during their lifetime, there exists a seemingly infinite number of possible alternatives from which they could choose. However, the human mind is not set up to exhaustively generate alternative choices. Rather, it is set up to make reasonably accurate decisions with as little effort as possible. One way this manifests is through the tendency to be a *cognitive miser*, that is to expend as few mental resources to complete a task as possible (Fiske and Taylor 1991). To illustrate, consider the following problem from Stanovich (2009):

Anne is looking at Brad, who is looking at Claire. Anne is married and Claire is not. Is a married person looking at an unmarried person?

A ubiquitous response to encountering this problem is that there is not enough information to solve the problem. This is because the marriage status of Brad remains unknown and a typical first glance would suggest that without this piece of information, the problem cannot be solved. This is how most people mentally represent the information in this problem:

Married → *Unknown* → Unmarried.

Importantly, this represents only the information provided directly in the problem. What is key is that more information can be inferred by simply testing the possible marital statuses of Brad. If it is assumed Brad is married the mental representation becomes:

Married → Married → Unmarried.

Here, the answer to the question (“*Is a married person looking at an unmarried person?*”) is YES. A married person (Brad) is looking at unmarried person (Claire). Now, consider a case in which Brad is unmarried. The mental representation becomes:

Married → Unmarried → Unmarried.

Once again, a married person (Anne) is looking at unmarried person (Brad). So, in all cases the answer is YES, a married person is looking at unmarried person. When explained, people are quick to realize the error of their thinking and wonder how they were unable to reach that conclusion in the first place. The problem is that people are cognitive misers – they tend to mentally represent only the information

that is stated directly and fail to fully flesh out the problem (Johnson-Laird 2012) or perform “cognitive decoupling” (Stanovich 2018). To decouple is to construct mental representations of possible alternative states and compare them to the presented problem – as was done in the above illustration. However, decoupling is difficult. It requires substantial cognitive resources and is antithetical to the tendency for humans to be cognitive misers (Stanovich 2020). Despite decoupling being necessary to the generation of possible alternatives, humans do not readily perform it and as a result often have very few alternatives to choose from.

Stages of Decision-Making

Due to the complex nature of decision-making, the processes involved in making a decision have been divided into the following sub-categories: defining a decision-maker; framing a decision problem and setting the goals; asserting the decision circumstances and hard or soft constraints; defining the set of criteria; gathering possible alternatives; judging the alternatives according to the criteria, and finally making a decision and evaluating it. The next sections of this chapter will explore each of these stages.

Defining a Decision-Maker

For every decision, the first question that must be asked and answered is, “who is making the decision?” Individuals, groups, and machines are all appropriate responses to such a question and the decision-making process diverges based on the answer. For the purposes of this chapter, the sole focus will be on the individual as the decision-maker. Readers interested in group or machine-based decision-making are encouraged to explore beyond this chapter (Kerr and Tindale 2004; Surowiecki 2004).

Setting Conditions and Framing a Problem

Next, a decision problem is somehow defined and described. When individuals are required to make a decision, they must outline the conditions under which they must make their decision.

Conditions

Decisions are made under one of three conditions: certainty, uncertainty, and risk (Luce and Raiffa 1957). These settings each uniquely impact how utility is calculated, rationality is defined, and what criteria require satisfying for the decisional problem to be solved.

A situation of certainty means that a decision-maker knows the outcomes that will result from a possible choice for sure. Imagine an individual who is considering one of four places to spend their next holiday (Table 1). If their preferences follow the rationality axioms, then it is possible to assign some values reflecting intensity of their satisfaction (*utility*) going to different locations and doing different things (Table 1, column “certainty”). Based on these utilities, the individual will be most satisfied if they head to the mountains and partake in hiking activities and least satisfied with staying home watching Netflix.

A more realistic approach to such a decision would be to consider the additional factors that may impact the utility of the possible choices. In this case, the expected weather of each location (see Table 1, column titled “uncertainty”) might modify the utility the individual expects to derive from each location. This creates a condition of uncertainty because the decision-maker cannot be sure of the utility that will be derived from each

destination, as it depends on external states of nature. While uncertainty adds complexity to the decision-making process, it does not necessarily make the expected utility calculation impossible.

An element of risk can be further considered, in which full information about chance is available. For instance, long-term weather forecasts can be examined in an attempt to predict the particular weather that will occur during the holiday (see Table 1, column “chances”). Finally, a decision-maker may experience ambiguity, a situation when there is incomplete knowledge of chance. Therefore, ambiguity lies somewhere between uncertainty (no information about chance) and risk (full information about chance). People largely prefer decisions under risk to decisions in ambiguity to decisions under uncertainty (Ellsberg 1961), as they prefer to have more information at hand, even if this information will not be used in praxis (Michailova et al. 2017).

Formulating the Decision Problem

Formulating a problem involves setting decision goals and identifying possible ways these goals could be achieved given the conditions surrounding the decision. Activating different goals can even affect an individual’s preferences. To illustrate the latter claim, in a landmark Tversky and Kahneman (1981) experiment, participants were

Decision-Making, Table 1 Three ways of framing a decision problem within three kinds of conditions (certainty, uncertainty, and risk) on the example of where to go on holidays

<i>Conditions:</i>	Certainty	Uncertainty				Risk			
		States of nature				States of nature			
		Rainy, cold, windy	Windy, cloudy, cool	Warm, no clouds	Very hot, dry, no wind	Rainy, cold, windy	Windy, cloudy, cool	Warm, no clouds	Very hot, dry, no wind
<i>Possibilities</i>	Utilities	Utilities				Chances			
Lakes, surfing	8	3	10	5	2	0.2	0.4	0.3	0.1
Mountains, hiking	9	3	7	9	6	0.2	0.4	0.2	0.2
Sea, beaching	6	1	2	7	9	0.1	0.1	0.5	0.3
Staying home, binge-watching	2	5	5	2	1	0.1	0.2	0.4	0.3

to choose between two ways of curing a new type of flu, threatening lives of numerous people. One vaccine was certain to save only some of the people, the other vaccine had a chance to save everyone and a chance to save no one. When the vaccine was said to *save* lives, people opted for the vaccine with certain outcomes; when the vaccine was said to *result in some deaths*, people opted for the risky vaccine. This reveals that it is possible to change decision-makers' risk preferences through highlighting different goals merely by slight changes to the wording of a problem: people prefer receiving certain gains (i.e., lives saved), but are risk-seeking when it comes to avoiding losses (i.e., deaths).

Decision Space of Alternatives

The collection of possible solutions one generates when considering how to achieve a goal is called decision space, and such possibilities are called alternatives. The human mind has evolved to reduce the decision space to a manageable size, for example, by removing some alternatives even prior to their consideration. While this improves the ability to make the plethora of decisions humans are required to make in their daily lives it necessitates giving up the possibility of having complete information for nearly every choice.

Although there are often many ways that an individual could go about achieving a goal, there are usually hard and soft constraints that move some alternatives out of consideration. Hard constraints are settings that impact a decision but are independent of the decision-maker. Soft constraints are settings that arise internally from the decision-maker. Some examples of hard constraints are: when purchasing ice cream one can only choose from the available options; when buying furniture, one must keep in mind the dimensions of the room they intend to furnish. Regarding soft constraints, some investors refuse to purchase stock in so-called sin companies (i.e., in firearm manufacturers or tobacco companies), objecting on the grounds of their morality (Niszczota and Białek 2020). Additionally, soft constraints can be the result of the limited processing capacity (i.e., not being able to remember

every available alternative) or from processes meant to simplify the decision process to prevent having to expend much cognitive effort.

In reading this chapter, one is necessarily declining to engage in a large range of other alternatives, such as watching a movie or working out. It is unlikely that one values learning the content of this chapter over any other possible thing one could be doing instead. Rather, reading this chapter may have been the best alternative compared to just a few other alternatives that may have come to one's mind (e.g., working out). This information is shared to help illustrate the phenomenon of opportunity cost neglect (Alchian 1968). That is, the cost of reading this chapter is not only the time invested, but also the forgone benefits of alternative activities. Often, when choice alternatives that were not evaluated are presented to an individual, they can be given undue weight in the decision process. As painful as this realization may be, neglecting these opportunity costs does not necessarily mean a bad decision was made. Generating and considering possible alternatives to a course of action can be cognitively taxing, requiring a large amount of time and resources to be expended. And it is an action itself, so if one decided to optimally select what to do, one would in fact be thinking instead of doing the thing one wanted to do. By neglecting most and considering only a short list (or no list at all) of alternatives, a choice can be made quickly and efficiently.

Another phenomenon related to navigating the decision space is the omission bias, a preference for options that do not require action (Spranca et al. 1991). People display omission bias because they are far more sensitive to direct outcomes of their actions compared to consequences of omissions (Royzman and Baron 2002). One of the reasons for it is that the causal link in the direct outcome is far more obvious (Waldmann et al. 2017). For example, people see a direct link between vaccination and its possible negative side effects, but not between no vaccination and the possibility of falling prey to the preventable disease. This direct link leads some to refuse to vaccinate even if its side-effects are far less severe

than the disease (Ritov and Baron 1990). So, our mind architecture makes us select an inferior choice option because of how the choice problem is formulated.

Decision Analysis: Making a Decision and Evaluation

Once some number of alternatives have been generated, the next step of the decision-making process is to determine the alternatives that pass specific criteria or meet the goals of the decision-maker. This is a complex process, and several normative models have been developed to say which strategy ought to yield the best results in satisfying one’s goals. There are several strategies, because they are aimed to satisfy preferences which can vary across individuals. For instance, one person might strive to achieve the greatest amount of utility possible regardless of the risk involved. Another person may prefer to play it safe and minimize the possibility to experience loss or regret. So, normative strategies are dependent on preferences.

Certainty

When the utilities for each available option are known to the decision-maker, the act of choosing is seemingly easy – it is possible to select the alternative with the highest assigned utility. However, even in cases where certainty is present, decision-making is rarely simple. One consideration to keep in mind is the advanced calculation that may be required, or where it is impossible to find a solution in a reasonable timeframe. Consider a superficially simple problem: the traveling salesman problem. In it, the goal is to find the shortest route for the salesman to travel that starts from and ends at their home and requires them to

pass through N cities. Importantly, the exact distance between each city is known (Lenstra and Kan 1975). When the number of cities (N) is a low number, such as 3, then only 6 possible routes exist – finding the shortest route is straightforward. Yet, when N reaches a slightly higher number, such as 10, the number of possible routes is more than 180,000 – finding the shortest route here becomes a much more daunting task despite being in a condition of certainty. For the best route between 20 cities, the task becomes so complex that an advanced computer would require about two years to find it. In cases like these, shortcuts and decision strategies aid individuals in finding a solution.

The traveling salesman problem had only one criteria of evaluation: the shortest path is the best. However, when deciding, an individual may want to consider multiple criteria. For example, when purchasing a house, its price, space, condition, location, and distance from work are all important factors. They seem difficult to combine, as they are different qualities/measures, and even worse, sometimes contradictory (e.g., one would probably want the lowest price and the greatest living space). This often further complicates the decision-making process. How might someone go about finding the optimal solution in such instances? Consider the holiday example below in Table 2. When analyzing possible destinations for a holiday, joy, achievements, and sociability are criteria that might be considered. Here, the numbers represent an individual’s subjective judgment of how a given destination satisfies the criteria. Assigned are also weights which express differentiated importance of the criteria.

First, notice that some possibilities are dominated by others. That is, under each criterion,

Decision-Making, Table 2 Multi-attribute decision problem

	Criteria (attributes)			
	Joy	Achievement	Sociability	
Possibilities	0.50	0.15	0.35	MAU
Lakes, surfing	6	10	10	8
Mountains, hiking	10	8	8	9
Sea, beaching	4	3	10	6
Staying home, binge-watching	1	1	4	2

staying home is worse than going to the beach. So, the choice alternative of staying home can and should be immediately discarded and should not receive further consideration. With the three alternatives remaining, various time consuming and effort requiring methods to utilize more information can be employed. One such method is multi-attribute utility analysis (MAU; Keeney and Raiffa 1993). MAU uses all the information available, and allows the decision-maker to compensate low scores on some criteria with higher scores on other criteria. For example, relatively low joy in surfing is compensated by high achievement and sociability scores. To estimate the MAU, one needs to evaluate all alternatives on all criteria, and weight the importance of each criterion (as already done in Table 2). Next, one needs to multiply weights and values for every alternative, and select the alternative which has the greatest sum of all these products. For mountains, the MAU calculation is $(0.5 \cdot 10) + (0.15 \cdot 8) + (0.35 \cdot 8) = 9$, and it is the highest value among all alternatives.

Although this weighed additive strategy uses all the information, it is effortful, and in practice, people tend to act as cognitive misers and simplify decisions rather than expend great effort to resolve them (Payne et al. 1993). For instance, one could employ a Lexicographic Strategy instead. Here, one compares the alternatives on the attribute deemed most important to them and ties are resolved by evaluating the tied alternatives on the next most important attribute. If joy is the most important criterion, one should go hiking, as it promises the greatest joy compared to other locations. One can decide even quicker using a Satisfaction Strategy (Simon 1959): set minimum requirements and then choose the first possibility that meets them. Let it be 5 for joy and 9 for other criteria. In our example, surfing on lakes would be chosen. There is also a possibility to combine these strategies and eliminate alternatives which do not meet the minimal requirements on criteria considered according to their importance (Tversky 1972). We would, considering joy, discard staying home and beaching in the first step. In the second step, we would consider sociability, discarding hiking, and finally choose surfing.

Uncertainty

Things get more complicated under uncertainty, as external states of the world influence the utility one can derive from a given option. Now, an individual should incorporate the natural uncertainty of the world into their decision-making process. Of course, normative approaches have provided methodology to do this as well. For example, one method allows the individual to take into account uncertain conditions and their attitude toward experiencing good and bad things (Luce and Raiffa 1957). To better understand these strategies, Table 3 is a modified version of Table 1.

If a person is good at dealing with negative outcomes, then they can apply an optimistic rule of “maximax” – choose the alternative that contains the greatest potential utility to be gained regardless of the other possibility utilities it could provide. In the holiday example, going to lakes allows the person to experience the greatest amount of utility – 10.

If the decision-maker wants to protect themselves from the worst experience, they can use the “maximin” rule – choose the alternative with the highest utility among the lowest-utility possibility for each alternative. In the holiday example, the worst outcomes for each destination are compared (2 for Lakes, 3 for Mountains, 1 for Sea and Home). So applying the maximin rule will lead the individual to choosing the mountains as its worst outcome is superior to the rest.

Alternatively, an individual looking to minimize the potential for regret can follow an opportunistic “minimax” rule. In plain words, regret is the difference between the experienced utility of what one selected and the highest possible utility one could have experienced had they selected the best available alternative for a given state (columns “regret”). In our holiday example, consider the bad weather. Here, the best possible outcome is staying home, and all other choices result in a regret equal to how much worse their utility is. For every alternative, the greatest regret is identified (7 for Lakes, 3 for Mountains, 8 for Sea and Home), and the alternative that has the smallest value of the maximal regret (i.e., Mountains) is selected. Alternatively, one can apply the

Laplace Principle of Insufficient Reason and, not knowing chances, assume all the weather states are equally probable which is equivalent to averaging outcomes for a given alternative. Here, the most attractive location would again be the mountains with an average utility score of $(3 + 7 + 10 + 6)/4 = 6.5$.

As stated above, selection of the strategy depends on preferences. In this instance, the preferences are one's attitudes toward positive and negative outcomes.

Risk

To be rational, a decision-maker should consistently apply a decision criterion to each possible choice option. However, people often use different criteria to evaluate different options. For instance, when people were proposed to take part in one of two lotteries: L1: 25% chance of winning \$30, and L2: 20% chance of winning \$45, a majority (58%) chose the second option. However, most people (74%) chose to receive \$30 for sure instead of playing a lottery with 80% chance to earn \$45 and 20% chance of winning nothing (Tversky and Kahneman 1981). When deciding between two gambles, people select the one with highest expected utility. When a lottery is substituted with certainty, people tend to prefer guaranteed gain over a non-guaranteed option that is expected to provide the greatest utility.

There are methods combining probabilities of particular payoffs with their utilities. We can simply multiply the probability of a payoff by its utility, returning four such products for each holiday destination (i.e., for rainy, windy, cold and very hot weather). According to subjective expected utility theory (Savage 1954; Von Neumann and Morgenstern 1944), a decision-maker should choose the alternative with the highest expected utility, that is, the greatest sum of these four products (column "SEU"). Having computed that for all the four alternatives, we should decide on hiking in mountains, because it has the highest subjective expected utility of 6.4.

Fallacious Criteria of Making Decisions

To save some effort in managing the decision space (abundance of choice alternatives) people defer to various strategies. Next some of the

fallacious strategies employed will be reviewed. By fallacious it is meant that the strategy often leads to suboptimal choice at the benefit of saving time and effort usually required to apply a more logical decision strategy.

Imagine a person visiting a website that asks them to accept the site's cookies policy and allow it to make use of the person's private information. This person can opt out, but this requires to dive into advanced settings and requires several steps. Now, consider another website that asks this person whether they allow the website to use the information or not. Are they equally likely to provide access to their data? Experimental evidence suggests people are far more likely to allow it in the first case (Samuelson & Zeckhauser, 1988).

To understand why this happens, one needs to refer to a concept of defaults, a course of action that will happen unless actively changed. People largely accept the default option unless prompted to consider the other possibilities. This rely-on-the-default strategy allows one to save effort, which would be otherwise required to decide between two equally attractive outcomes. But this strategy also makes people often select the inferior option simply because the inferior option happens to be the default. In politics, it displays as so-called system justification, an assumption the world should uphold the status quo, simply because it was designed this way in the past (Jost et al. 2004). A Nobel Prize was awarded to Richard Thaler for his work on defaults and its use to facilitate desired decision-making, so-called *nudge* (Thaler and Sunstein 2008).

Another error in reasoning is using the criterion of sunk cost, when one decides to continue with one course of action only because of the resources previously invested in it (Arkes and Blumer 1985). The sunk cost bias occurs when an individual continues with an endeavor that they would have otherwise stopped had they not already invested some resources. As resources expended in the past cannot be recovered, they should not affect present decisions. However, they often do. For example, consider patients A and B. Each patient is presenting with the same symptoms of the same disease and each require the same treatment. In fact, the only difference between patients

A and B is that patient A has been receiving treatment for the past several months. Often medical professionals will continue the treatment of patient A that they would not otherwise administer to the identical patient B simply because they have already invested resources into treating patient A (Turpin et al. 2019; Wilkinson et al. 2019). The allure of honoring sunk costs may be even stronger in moral domains such as animal testing, as people are willing to continue sacrificing laboratory monkeys to develop medical cures even after learning that further development of the cure will bring no actual benefit (Meyers et al. 2019).

Evaluation of a Decision: A Hindsight Bias and Hedonic Adaptation

How one evaluates the quality of a decision is of high importance. Often, people evaluate decisions based on their outcomes, largely ignoring the process that led them to choose a specific option. They often do this by inspecting the outcome, which counterintuitively, is not a good strategy. A reality of the decision-making process is that “right” decisions will not always lead to good or wanted results. Similarly, it is possible that “wrong” decisions produce good or wanted results. For example, one can profitably invest in a project that has only a 10% chance of providing a return, and another person can lose their investment in a project that has a 90% chance of a return of the same value. Yet, despite the positive outcome, the first decision-maker was simply luckier than the second one; a decision to invest in the 10%-chance project would result in much worse outcomes in the long run.

Having to experience the outcomes, people usually tend to evaluate decisions as more or less good. Normatively, the decisions are made right when they are in accordance with a decision-maker’s preferences and consequently follow assumed methods, algorithms, and heuristics, according to the knowledge at the time of the decision. Two dangers that await a decision-maker who has made a decision and experiences its consequences are: hindsight bias and hedonic adaptation.

Hindsight bias relates to judging past events as more predictable than they actually were (Fischhoff 1975). Participants read an account of historical events with one of several outcomes and estimated the probability of possible endings. Across experiments, participants consistently viewed the outcome they had received as having been more likely than did those who had not been informed of an outcome (Klein et al. 2017). This effect stems from a confusion between one’s current knowledge and memories of the knowledge one possessed when deciding. Nowadays, people might live in impression that the COVID-19 pandemic was easy to predict and it was obvious what interventions and on what scale should be implemented (Redelmeier and Shafir 2020).

When deciding, an individual can project how their life will change if they achieve a goal. Individuals also tend to overestimate the intensity and duration of their emotional reactions to the goal’s outcomes (affective forecasting error, Wilson and Gilbert 2005). However, when people experience the consequences of a decision, the affective intensity of favorable and unfavorable experiences is reduced and people adapt to them (hedonic adaptation, Frederick and Loewenstein 1999). Yet, people adapt to positive outcomes faster than to negative outcomes (hedonic asymmetry, Frijda 2007). Hence, once the outcomes are known, the evaluation of the decision process can be distorted, making it subjectively less bad.

Summary

Deciding requires coming up with possibilities and comparing them. In real life, in contrast with artificial experimental tasks, people are able to generate almost unlimited number of possible solutions to a given problem. This makes decision-making taxing and necessitates that people adopt strategies to limit the number of possibilities they consider. Therefore, a reduction of possible choice alternatives, even if it is completed unreflectively, is often beneficial to the decision-making process because it reduces a complex decision to a manageable decision.

This simplification of a problem is not necessarily a bad thing, as the optimal decision does not require every possible solution to be known. Nor, as has been covered, does knowing all the possibilities even guarantee that one will make the best decision. Generating and considering each possible alternative is often taxing beyond one's limited cognitive capacities. Further, even having the mental resources available people tend to be cognitive misers, they often will not want to perform the necessary decoupling. With the choices available to them, Normative Analysis can be used by making an expected utility calculation, keeping in mind conditions of certainty, uncertainty, and risk. More often, people defer to strategies meant to conserve cognitive resources at the cost of picking a satisfactory, though perhaps not optimal, solution. What is critical is that normatively incorrect solutions can be at times most beneficial, yet they will be inferior to normatively correct solutions in the long run.

As time progresses, so too will the three streams of research in Judgment and Decision Making. The scientific canon will continue to grow as further exploration takes place into prescriptive models of decision-making, descriptive models of decision-making, and ways to merge the gap between the prescriptive and descriptive. An interested reader is encouraged to dive into any of the referenced publications to learn more about possibilities in decision-making.

Cross-References

- [American Pragmatism](#)
- [“As If” Thinking](#)
- [Counterfactual thinking](#)
- [Future Problem Solving](#)
- [Heuristics](#)
- [Probabilistic Thinking](#)
- [Possibility Thinking](#)
- [Possible in Economics](#)
- [Risk](#)
- [Tolerance of Ambiguity](#)
- [Uncertainty](#)

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Deliberation

Leandro De Brasi

Universidad de La Frontera, Temuco, Chile

Abstract

Deliberation involves the interpersonal exchange and evaluation of reasons and counter-reasons, in which each party attempts to rationally persuade the others, rather than

manipulating or bargaining with them. This group deliberation is crucial for the generation of epistemic goods, such as knowledge and reasonable beliefs, given that it helps us eradicate possible errors. But it is a familiar fact that groups often perform suboptimally and indeed only under particular conditions deliberative groups can tap this epistemic potential and in turn avoid deliberative distortions, such as polarization and domination. This entry then focuses on certain positive epistemic possibilities that group deliberation can foster and on certain structural and personal conditions that enable such potential. Regarding the structural conditions, the deliberative group needs to instantiate some cognitive diversity concerning opinions, knowledge, and skills. Regarding the personal conditions, the individual deliberators need to possess an intellectually humble and autonomous character.

Keywords

Deliberation · Cognitive bias · Prejudice · Epistemic potential · Cognitive diversity · Intellectual character · Epistemic injustice

Deliberation is the process by which individuals weight the merits of competing reasons in discussion together. In particular, the individuals, conversing together, jointly explore the plausibility of some claim, each bringing a slightly different perspective to bear. The individuals are meant to defend those perspectives, which are challenged by their interlocutors. These challenges cannot be ignored and reasons (some of which are tailored to specific objections raised) are evaluated in this exchange. For example, one party may advance a reason in favor of some claim and another one may respond by introducing a counter-reason or defeater that speaks against the claim; then the first party may introduce a defeater of the defeater or concede the original reason offered has been defeated – or weakened to certain extent – and perhaps introduce some new reason, and so on. Eventually they weight the reasons for and against to see how strong the case for the claim is. In this sort of deliberation, each party attempts

to rationally persuade the other parties by them appreciating the quality of the reasons (not by, say, manipulating or bargaining with them). So deliberation is the interpersonal practice that involves the production and evaluation of epistemic reasons for and against some claim and its consequent possible revision (De Brasi 2020a).

This interpersonal exchange and evaluation of reasons and counter-reasons can be crucial for the generation of epistemic goods, such as knowledge and reasonable beliefs, given that it helps us eradicate possible errors. So, in this sense, this sort of group deliberation can foster epistemically better formation and updating of beliefs as well as more effective decision-making (given its dependence on the epistemic quality of the beliefs in which it rests).

One obvious way in which interpersonal deliberation can help eradicate possible errors has to do with the dispersal of knowledge. Different people often bring to the discussion different knowledge. This additional flow of information can bring to the discussion new reasons and defeaters and so increase the chance that erroneous views be corrected (Fearon 1998). But people can be diverse in other ways too. For example, people can also vary with respect to the cognitive skills they exploit to target some issue (or how they use them). And this too can serve the aim of correcting errors. For example, by pooling the limited and fallible cognitive abilities of two deliberators, they can increase the chance to pick out errors either because one thinks (on her own, given her abilities), say, some possibility that the other would not have thought (and vice versa) or because some possibility is put forward that is the brainchild of their abilities and interaction (and neither of them could have thought of it on their own).

Another, less obvious, reason has to do with neutralizing certain cognitive shortcomings. To appreciate this, consider two pervasive forms of faulty thinking. The confirmation bias is the natural and pervasive tendency to find reasons for one's beliefs and against beliefs one opposes, which does not apply to the evaluation of reasons (Mercier 2017). However, deliberation also involves evaluating reasons and when it comes to evaluating reasons that one opposes, we

scrutinize them for longer and subject them to much more extensive refutational analysis than those that agree with our prior beliefs (Edwards and Smith 1996). Given this disconfirmation bias, we are more inclined to detect errors in reasoning for a conclusion with which, to begin with, we disagree. Relatedly, research on the bias blind spot shows that one is better at detecting cognitive biases in others than in oneself (Pronin et al. 2004). This means that one is naturally a more rigorous evaluator of opposing views.

Moreover, one can recognize and concede to a good reason against one's view. In fact, even when people are confident about some view, they can change it if the reasons suggest it (Chan et al. 2017). But, of course, these biases suggest that probably one cannot alone come up with some such reasons against one's view and so deliberation can again prove itself epistemically useful given that it allows for the interaction of individuals with disagreeing views. Given this interaction, both the confirmation and disconfirmation biases become part of an elegant and useful way of dividing cognitive labor (Mercier and Sperber 2017). On the one hand, the confirmation bias makes each individual come up with a (relevantly strong) case in favor of their own views. And although one does not search for reasons against one's view, the other, who disagrees with one, does. So each presents the best case for and against some view. On the other hand, the disconfirmation bias makes each individual a rigorous judge of the other's reasons. Although one does not scrutinize one's reasons assiduously, the other, who disagrees with one, does: each one controls the quality of the reasons provided by the other. So, given that we can recognize and concede to a better reason, the less error-prone case – given the available evidence – is likely to prevail. In particular, these individual cognitive biases can be neutralized by thinking together in a critically engaged manner and so, in so far as deliberation is pursued cooperatively, increase the epistemic performance of the group.

As just seen, group deliberation has the potential to correct possible errors due to the pooling of knowledge and skills and the neutralization of cognitive shortcomings, and so we have

collectively better chances to acquire epistemic goods. However, these positive epistemic possibilities of group deliberation are not simply realized by merely assembling individuals into a group. In other words, these are conditional possibilities that would, if realized, promote epistemic goods (and, minimally, remove false beliefs). But they are not easily realized. As much research focusing on the negative aspects of group dynamics has shown, groups are notoriously fallible and often perform suboptimally, making poor decisions and some even resulting in fiascos (e.g., Janis 1982). The phrase “a camel is a horse designed by a committee,” allegedly remarked by Sir Alec Issigonis, captures the familiar fact that sometimes groups end up performing worse than their average median member. There is much ineffective group collaboration and researchers have tried to understand the inhibitors and facilitators of adequate group performance (e.g., Sunstein and Hastie 2015). This entry considers certain structural and personal conditions that enable the above epistemic potential of group deliberation, hence focusing primarily on the facilitators of adequate group performance. In particular, in order for this epistemic potential to be tapped, the deliberative group needs to instantiate a certain cognitive diversity and the individual deliberators need to possess a certain intellectual character. Having said that, next, a couple of common deliberative distortions that are the result of certain inhibitors, such as cognitive homogeneity and prejudicial stereotypes, are presented in order to introduce these structural and personal conditions, although more emphasis will be made on the latter ones.

Polarization and Cognitive Diversity

Deliberation can lead to epistemically good outcomes but whether it does so depends partly on certain structural conditions holding. It has already been noticed the role that diversity of knowledge and cognitive skills play in promoting these benefits. But diversity of opinion is also required within the group if members are to search for different reasons and to assiduously evaluate

opposing views (and so, as one would expect and as research has shown (Nemeth et al. 2001), techniques such as devil's advocate are not effective given that the voicing of authentic positions is required). Indeed, deliberation seems to be epistemically harmful in the absence of this diversity. After all, homogeneous groups may fail to produce reasons against their shared beliefs and members may provide each other with additional reasons supporting them. This homogeneity can promote group polarization: that is, the members of the group end up with more extreme beliefs than they had prior to deliberation (Isenberg 1986).

This polarization can result, as just seen, from the sharing of confirmatory information. Another process that can bring about group polarization is social comparison: in this case, the polarization results from in-group comparisons. Even if the group does not share information, its members attempt to maintain their reputation and self-conception by emphasizing the attitudes they perceive to be normative within the group (Sunstein and Hastie 2015). But this again is likely to happen only in a group of likeminded people, so the above group heterogeneity can also remedy group polarization due to social comparison. In any case, the evidence in favor of consistent and significant group polarization in deliberation is found only in homogeneous groups (e.g., Levendusky et al. 2016). So a purely structural condition concerning the composition of the group, which successfully promotes the relevant cognitive diversity, can help suppress this deliberative distortion.

Domination and Reciprocity

Other distortions, such as domination (Sanders 1997), can occur in cognitive heterogeneous groups and so the above structural specifications cannot be sufficient to counteract them. Domination concerns the move of the overall group opinion toward the views of the socially privileged members. To appreciate how domination can occur in a cognitively heterogeneous group, consider that minorities within such a group might self-silence themselves (say, for fear to be

ridiculed, stigmatized, or some other social punishment). Of course, a group norm that welcomes dissent can nudge the minority to speak up (Paluck and Green 2009), but whether someone is then listened to when speaking is another issue. In fact, people might not listen to others because of differences in social identity. Take, for example, the case of gender. Many cultures, to a bigger or lesser extent, have led to a gender gap in terms of self-confidence: particularly, women experience a deficit, relative to men, in expectations about competence (Beyer and Bowden 1997; Karakowsky et al. 2004). These expectations of course affect whether men ignore or listen (more or less) to what women say, so women's ideas often have less impact or are blatantly suppressed in mixed-gender groups. Moreover, the systematic occurrence of such interactions can affect the confidence of women.

These competency-expectations are often the result of implicit prejudicial stereotypes (Brownstein and Saul 2016). Of course, people frequently employ identity-based stereotypes and they are not always at fault in doing so (indeed, such employment of stereotypes is a useful heuristic as long as they embody true generalizations and, in fact, we must employ them in order to engage in effective real-time interaction with people). But prejudicial stereotypes are false stereotypes: they wrongly connect a given social identity with some particular quality. So, given that these prejudices can affect the attention someone is paid in a deliberative interaction and damage someone's confidence on her ability to argue, they can contribute to the domination of one subgroup over another one (i.e., moving the overall opinion of the group towards the opinion of the dominant subgroup).

In fact, for the above positive epistemic possibilities to realize, a certain reciprocity needs to be instantiated. In particular, for the deliberation to involve a back-and-forth of reasons that can allow the better (less error-prone) reasons to prevail, it requires to be an interactional, two-way communicative exchange. Importantly, this process of giving and taking reasons includes responding to the reasons others have for their views and against one's. In this sense, deliberation is a reciprocal

process, where reasons are not only introduced by the different parties but also responded to. For this to be the case, it is not only important to give voice to the different viewpoints but also to listen to them. It is clear then that if there is to be a to-and-fro of reasons, interlocutors need to listen to each other (of course there are other forms of communicative receptivity aside from this aural one, but for simplicity sake here the focus is on listening).

Importantly, this listening needs to be equally attentive to all parties: in other words, the taking in of others' reasons should not be restricted to some of the reasons voiced in the deliberation. So proper deliberation requires attentive silence in order for one to listen to others, not merely remaining silent so to respect their right to express their views. Moreover, it is not enough simply to attentively listen to the others' reasons (let alone hear them, like one hears a noise). One is also to carefully listen to the others' reasons if one is to respond appropriately to them. One is to make the effort to adequately grasp the other's position (i.e., to understand the other's reasons) and for that careful, effortful listening is required. So, if deliberation is to be a dialogue in which we really address each other's reasons, as opposed to a series of rather disjointed monologues, deliberators need not only listen widely to all deliberators' reasons but also listen carefully to understand their reasons correctly and be able to respond appropriately (cf. Brownell 2016; Paulus et al. 2019).

Certainly, prejudices can more or less affect, as mentioned before, this listening. For example, we normally consider the trustworthiness of the sources before considering the reasons offered by them (Han et al. 2009; Hovland et al. 1953). In these assessments, prejudices can, and normally do, interfere (Perloff 2017). Stereotypes related to social identities concerning gender, race, sexual orientation, and religion, to mention some, can make people not to listen to someone. In other words, prejudices can interfere with listening widely. Moreover, in cases where the interlocutor is not completely discredited, prejudices can interfere with listening carefully, given that the (unfairly) lower credibility attributed to the

interlocutor can render it pragmatically irrational to spend the cognitive resources to make the effort to be as charitable as possible about the viewpoint offered and hence to promote proper understanding.

These are cases of epistemic injustice, where less credibility than deserved is attributed to someone's informative and argumentative assertions due to a negative identity prejudice attaching to them (Pohlhaus 2017). In these cases, an undeserved systematic harm is done to the person. More precisely, if we distinguish, following Miranda Fricker (2007), between primary and secondary aspects of the harm, the primary harm to individuals is in their capacity as epistemic agents and it is a species of insult or disrespect. The secondary harms seem to be varied. For one thing, and as seen above, experiencing constant credibility deficits can damage the epistemic confidence of the individual. For another, and importantly for present purposes, when identity prejudices cause reduced credibility judgments, reasons can fail to have the rational force that they ought and so they can affect the epistemic performance of the deliberative group. In short, the epistemic force of the reasons does not determine the deliberative outcome, which detracts us from the aspiration to be guided by the better reasons. So domination, and in particular those cases involving epistemic injustices, is likely to require, unlike polarization, changes in the psychological make-up of individuals if it is to be counteracted. Put differently, to reap deliberation's epistemic benefits, it is likely, at least partly, to require certain personal conditions and not only structural ones.

Intellectual Character

Cognitive diversity regarding opinion, knowledge, and skill within the deliberative group is necessary but not sufficient to realize its epistemic potential. To counteract domination and in turn promote the required deliberative reciprocity, the deliberators need to possess a certain intellectual character. For example, this reciprocity requires a certain degree of intellectual humility. This is so if

intellectual humility is understood as the cognitive habit that foils both intellectual arrogance and deprecation: neither does the intellectually humble person overestimate her knowledge and other epistemic goods as well as epistemic capacities nor does she underestimate them (De Brasi 2020b). Particularly, intellectual humility reduces intellectual arrogance (without underappreciation of one's beliefs and capacities) by promoting a doubting attitude owing to the recognition of our fallibility (due to, say, biases and prejudices) and our limitation (due to, say, our finite cognitive power and time). This dimension of humility makes clear how it can render one open to engage in interpersonal deliberation. Moreover, intellectual humility also involves a disposition to change and make up one's mind even due to others' opinions. After all, it seems that if the above recognition does not impact on one's opinions, then it is difficult to think of it as such. This dimension of humility makes clear how it can help one actually depend epistemically on others in certain circumstances. So intellectual humility can be understood as some sort of confidence management of one's beliefs and epistemic capacities (cf. Kidd 2016). It is clear the potential that humility *qua* confidence-management has to help us counteract domination, including those cases which are due to epistemic injustices, since it helps us to fairly appreciate the contributions of interlocutors. Indeed, such well-calibrated humility helps us to listen widely and carefully to and engage with them.

Moreover, to realize deliberation's epistemic potential not only is the individual required to be intellectually humble but also intellectually autonomous. This is so if intellectual autonomy is understood as the cognitive habit that reduces sheer epistemic dependence on others by promoting a willingness and ability to think critically for oneself in judging views, without capitulating to hyper-individualism (De Brasi 2020b). In other words, one has the dispositions and attitudes to self-govern intellectually, which include, among other things, seeking reasons, demanding reasons, and assessing for oneself reasons and sources of them. So, given that, as seen, each party controls the quality of the reasons provided by the

opposing party and tailors their reasons to the objections raised in epistemically beneficial deliberation, these dispositions and attitudes to critically assess also play a central role in fostering deliberation's epistemic potential. So both humility and autonomy are required of deliberators if they are to take advantage of such potential.

Further, intellectual autonomy is not in tension with intellectual humility. Intellectual autonomy is not a matter of sheer epistemic independence (Fricker 2006) and so being intellectually humble, which entails openness to epistemic dependence, is not incompatible with being intellectually autonomous. Indeed, intellectual autonomy involves some sort of dependence management. But one should not rely on others blindly, and intellectual autonomy, *qua* dependence-management, requires that one be able to discriminate between the epistemically good and bad reasons that others offer us. So not only is intellectual autonomy not in tension with intellectual humility (the former involves the management of our epistemic dependence and the latter the management of our epistemic confidence so to be open to such epistemic dependence), but it also helps us foster the required reciprocity by critically responding to the other's reasons.

Conclusion

It is hard to collaborate successfully, as much research on group dynamics shows. Deliberating with others can anyway increase our epistemic performance by eradicating possible errors in our belief system and so in our decision-making. But only under certain conditions groups can tap this epistemic potential. After introducing the possible epistemic gains to be had by group deliberation (namely, the correction of errors due to the pooling of knowledge and skills and the neutralization of cognitive shortcomings, and so the promotion of epistemic goods, such as knowledge and reasonable beliefs), this entry considered certain structural and personal conditions that promote such deliberative potential. In particular, on the structural side, it was seen that a certain group composition, which instantiates diversity of

opinion, of knowledge and of skill, is required. On the personal side, it was seen rather more extensively that, to reap the epistemic benefits, the individual deliberators seem to need to instantiate a certain intellectual character; more specifically, to be intellectually humble and autonomous. The above should not suggest that the personal has a certain kind of primacy over the structural and both character and structure are important ingredients to realize the epistemic potential of group deliberation.

Moreover, given that deliberation can have a crucial role in our everyday individual and social lives in order to better conduct them epistemically, one would expect that learning to adequately engage in it would be a priority of the educational system. In fact, if this system aims to enable personal flourishing, to form competent democratic citizens or merely to provide people with the cognitive capabilities to be able to acquire epistemic goods for themselves and with others (De Brasi 2020a), there is a good case for the educational commitment to help develop intellectually humble and autonomous character in people. If this is so, a structural, educational modification for the development of this intellectual character might be required in order to further enable the epistemic potential of deliberative groups.

Cross-References

- [Decision-Making](#)
- [Inclusion](#)
- [Potential](#)

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Design Thinking

Samira Bourgeois-Bougrine
Université de Paris, Paris, France

Abstract

Design thinking (DT) is a human-centered approach to innovation that implies empathy as an innovation mindset to understand the latent needs of users observed in real settings. Those observations generate insights, which are translated into innovative products through iterations with quick-and-dirty prototypes in order to collect feedback from the field and users. Despite its growing popularity, several scholars have highlighted the lack of academic rigor in DT and have reported several limits such as its inability to support radical innovation. This entry will describe the process, challenges, and limitations in DT, as well as ways to open up the field of the possible in DT.

Keywords

Innovation · Design thinking · Human-centered Design · Needs · Empathy · Users

Introduction

Design thinking (DT) is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success (Brown 2009). DT emphasizes empathy as a state of mind to

innovate, focused first on understanding the latent needs of people through observation in real contexts. Indeed, DT starts by exploring the needs, dreams, desires and behaviors of the people that will be affected by the imagined solutions (e.g., products, services, environments, organizations). The guidelines for DT were made popular by the design and innovation company IDEO as well as Stanford University. Managers and practitioners in engineering design are increasingly integrating design thinking to stimulate innovation and DT as part of the curricula in many renowned management and engineering schools (Bourgeois-Bougrine et al. 2018).

Despite the growing popularity of DT, it should be mentioned that this is not a new process, “it is a new name for an old method” (Iskander 2018, p.2). Iskander (2018) considers that DT is poorly defined, based more on anecdotes than data, and is little more than basic common sense. Recent analysis of the uses of DT in industry (Carlgren et al. 2016, p.354) showed that “despite education and training in DT, interviewees described how many employees found it difficult to apply it in their own contexts after training.” The present entry will describe the DT process and address its limitations and possible ways to enhance its process.

The Design Thinking Process

DT emphasizes empathy as a state of mind to innovate, which begins with understanding the latent intellectual, physical, and emotional needs of people. It includes a set of tools to help designers move through five iterative steps: empathize, define, ideate, prototype, and test. These stages are the core components of the “three spaces of innovation” (Brown, Katz 2011, in Bourgeois-Bougrine et al. 2018): inspiration (e.g., the problem or opportunity that motivates the search for solutions; empathy-definition), ideation (e.g., the process of generating, developing, and testing ideas), and implementation (e.g., the path that leads from the project room to the market; prototype-test). These steps involve the art of thinking through drawing (visual thinking),

ethnographic research and other sources of inspiration (science fiction, biomimicry, cultural and historical benchmarks, *etc.*), and storytelling.

The inspiration-exploration phase is aimed at identifying problems and expectations. This is a phase where the team gathers information from different sources. The field favors the multiplication of ideas, the appropriation of the problem by the team, and thus the development of the motivation and the empathy within the team. The mastery of ethnographic research is essential for understanding the context of use and users and therefore the generation of ideas and solutions. Ethnographic research is crucial in the overall approach of the DT process, both in defining the needs and in designing relevant and creative solutions. DT relies on several tools (interviews, photos, videos, *etc.*) in order to enable teams to immerse themselves in the user experience in context as well as to collect perceptions at different stages of the project.

During the “conceptualization” or implementation phase, teams are encouraged to quickly test the first solutions envisaged using rudimentary prototypes in order to demonstrate their relevance. Investing directly in sophisticated prototypes presents the risk of leading them quickly on the convergence process and therefore not exploring all options. This highly experimental approach, by which the project is refined, co-developed through successive confrontations with the field and the user’s expectations, reduces the likelihood of disillusion that a team can experience at later stage of the project. Before the final prototype, the teams have the possibility to use different prototyping tools according to the stages of the project: drawing, cardboard, digital mock-up, and 3D printing. The main objective of the various prototypes, whatever their nature, is to collect feedback from the users regarding the relevance of the imagined solution(s) to be able to improve the prototypes in an iterative way.

Because of the strong orientation towards concrete action, fast or even temporary solutions, some researchers consider that it would be better to speak of “design-doing” instead of design thinking. This bias towards action can lead to the

implementation of a technical solution without really taking the time to engage in a genuine reflection about the root causes of the problem to be solved.

Design Thinking Challenges and Limitations

As described in recent review (Bourgeois-Bougrine et al. 2018), DT has been the subject of much criticism from researchers and practitioners. A frequent comment made about design thinking is the lack of a theoretical basis and academic rigor. Johansson-Sköldberg et al. (2013) suggest that these issues are due to two design thinking discourses: the academic discourses of “design(erly) thinking” and the management discourse. “Designerly thinking” refers to the academic construction of the professional designer’s practice, links theory and practice from a design perspective, and is accordingly rooted in the academic field of design. Within the managerial realm, “Design thinking” becomes a simplified version of “designerly thinking” or a way of describing a designer’s methods that is integrated into an academic or practical management discourse. In general, it has a more superficial and popular character and is less academically anchored than the designerly one (Johansson-Sköldberg et al. 2013, p. 121).

Many of DT’s influential ideas were, indeed, introduced in the 1950s by a Stanford educator, John E. Arnold, and his successors at the Mechanical Engineering department (Leifer and Meinel 2019). Arnold’s creative theories, such as creative engineering theory, need-based design theory, visual thinking, ambidextrous thinking, *etc.*, were inspired by McKim, Paul Guilford, and Abraham Maslow, as well as the philosopher Robert Hartman and the architect Buckminster Fuller (von Thienen et al. 2018). Further theoretical perspectives were introduced between the 1970s and 1990s with the foundational works of Simon, the Nobel Prize winner, and Schön, Buchanan, Lawson, and Krippendorff, among others (for extensive presentation see Johansson-Sköldberg et al. 2013).

Another major critique of DT is that radical innovations do not come from human- or user-centered approaches. Empathy towards users makes it possible to understand their needs and results in an incremental improvement of what already exists or in the development of a product or service to satisfy those needs. In an interview, Clayton Christensen, who developed the theory of “disruptive innovation,” considered that

the problem is when you say ‘listen to your customers,’ your customers are only going to lead you in a direction that they want to go in. Generally, that will never lead you to disruptive growth. You’ve got to find that new set of customers, and listen to them and follow them. That’s the trick. Once you have customers, they hold you captive to their needs [...]. You have to be careful which customers you listen to, and then you need to watch what they do, not listen to what they say”. (McGregor 2007 in Bourgeois-Bougrine et al. 2018).

Another challenge is related to the fact that engineers and managers perceive user insight as unspecific when it is not directly translated into technical requirements. In addition, insight gained and the reformulation of the initial problem may result in ideas and concepts that are difficult to implement if they are outside the scope of the company’s product planning. The iterative and explorative approach of DT is resource intensive and clashes with “the linear, efficiency-oriented processes of incremental product development” (Carlgren et al. 2016, p. 347 in Bourgeois-Bougrine et al. 2018). In addition, other cultural elements of DT, such as having fun, testing hypotheses quickly, interacting with users, failing and learning from mistakes, are perceived as challenging for companies with a strong risk-averse culture. Often reinforced by national cultures.

The Possible in Design Thinking

Promoting Radical Innovation: Enhancing DT

Radical innovation is only possible if a company overcomes the internal and external innovation barriers, breaks out from old mindsets, and unlearns existing routines and old logic (Assink 2006). The hill-climbing

paradigm¹ applied to incremental and radical innovation suggests that incremental innovation attempts to reach the highest point on the current hill, whereas radical innovation seeks the highest hill (Norman and Verganti 2012). Radical innovation implies a break with the past, either through the introduction of a new technology, a paradigm shift, or through a new vision that comes from a deep reinterpretation of the meaning of a product or service in line with socio-cultural changes. Users have difficulty anticipating their needs or considering this reinterpretation because of their total immersion in the current context and in the cultural paradigm. Iskander (2018) argues that DT is fundamentally conservative, unsuited to uncertainty, and preserves the political, economic, and physical status quo – all at odds with different possible futures of a product, service, company, or culture, more broadly.

Drawing on the benefits of prospective ergonomics and virtual environment, Bourgeois-Bougrine et al. (2017) proposed a combined approach to enhance DT in order to promote radical innovation mindset and open up the field of the possible within DT. Prospective ergonomics aims at “anticipating future needs, uses and behaviours or building future needs in order to create processes, products or services adapted to them” (Brangier et al. 2017, p. 48). Prospective ergonomics does not intend to predict the future or to reveal it as if it were something that already exists (de Jouvenel 2002), but rather invites it to be constructed. This approach uses rigorous methods that are quantitative, qualitative, normative, or exploratory in nature (Gordon and Glenn 2004): agent modeling, bibliometrics, causal layered analysis, decision modeling, *Delphi* techniques, scenarios, morphological analysis, road mapping, text mining, trend impact analysis, future wheel, and more.

¹Hill climbing is a mathematical optimization technique that attempts to find a better solution by incrementally changing a single element of the solution. If the change produces a better solution, an incremental change is made to the new solution, repeating until no further improvements can be found (Wikipedia: The Free Encyclopedia 2018).

With the aim to promote ideation and empathy, the proposed approach takes as a starting point the imagination of future needs using prospective scenarios approach, instead of users' latent and unmet needs (Bourgeois-Bougrine et al. 2018). This combined approach involves both analytical and intuitive thinking, imagination and creativity, as well as collaboration and communication within multidisciplinary teams that are involved in the development of artifacts and services that would change social practices. Once an innovative and futuristic challenge is chosen, teams enter a new cycle of the DT process according to the above-mentioned five-step model: empathize, define, ideate, prototype, test.

Moreover, recent research has shown that Multi-User Virtual Environments (MUVE) hold the potential for greater creativity support due to behavioral modulation in situations of physical isolation, the anonymity of the users, and the avatar appearance. MUVE allows for an exchange of ideas without production getting blocked when ideation tasks are held in virtual environments. "Productivity loss" has been reported in brainstorming groups. This has been linked to social inhibition due to evaluation apprehension, the impossibility to say two ideas aloud at the same time (production blocking), the tendency to suggest ideas too similar to others (fixation), and the tendency to rely on the group to suggest ideas (social loafing). It has been suggested that MUVE represents a conducive, safe, and comfortable environment that can elicit global processing and exploration, because, in this kind of atmosphere, individuals are more eager to take risks and that the perceived freedom from constraints triggers a risky, explorative processing style that promotes creativity.

In addition, virtual reality promotes empathy-related phenomena such as perspective-taking, which is the cognitive ability of imagining the perspective of others, to understand the experiences, the feelings, and emotions of others and show compassion and altruism. Virtual reality allows individuals to step into someone else's shoes, through a perceptual illusion called embodiment or body ownership and to move their perspectives to different scenarios and

universes. Therefore, virtual environments should be more explored in terms of the embodiment of various possible personas to foster empathy and co-creativity when involving users.

DT and Human-Centered Design

Because it places higher priority on human needs, DT is considered a human-centered approach to innovation. However, Human-Centered Design (HCD) definition and requirements depend on the context. For instance, IDEO, the company that made DT popular, defines HCD as a creative approach to problem-solving that cultivates a deep empathy with the target people you are designing for. In the domain of computer-based interactive systems,² HCD aims to make systems usable and useful by focusing on the users, their needs and requirements, and by applying Human Factors/Ergonomics,³ and usability knowledge and techniques. This approach enhances effectiveness and efficiency, improves human well-being, user satisfaction, accessibility, and sustainability, and counteracts possible adverse effects of use on human health, safety, and performance. This definition highlights the utility of HCD as an extension of Human Factors/Ergonomics (Kasdaglis and Stowers 2016 p. 345). Human Factors/Ergonomics is considered as a science-based discipline that brings together knowledge about human abilities and limitations from other subjects such as anatomy, physiology, psychology and uses it "to design systems, organizations, jobs, machines, tools, and consumer products for safe, efficient, and comfortable human use."⁴

Despite the fact that DT is considered to be a HCD path to innovation, it does not explicitly

²Computer-based interactive systems vary in scale and complexity and examples include automated banking systems, Web sites and applications, vending machines, mobile phones and digital television, etc.,

³The expression human factors is a predominantly North American. The terms 'ergonomics' and 'human factors' which can be used interchangeably are concerned with "fitting a job to a person" to fulfill the goals of occupational health and safety and productivity.

⁴<https://osha.oregon.gov/edu/grants/wrd/cergos/Pages/ergonomics.aspx>

spell out the Human Factors line of investigation as one of its core values. In the context of industrial or computer engineering, DT practitioners should be made aware of and use Human Factors/Ergonomics approaches and recommendations throughout the DT stages. As Endsley and Jones indicate, HCD does not mean “*asking users what they want and then giving it to them*” (2011, p.7). In the context of complex system, HCD means that (a) the technology should be organized around the “way users process information and make decisions” and (b) keep the user in control and aware of the state of the system (Endsley and Jones 2011, p.11). The integration of HCD and DT cultivates new directions in the possible for complex systems and design in response to current and potential human needs.

Possible Design Thinking Uses: Life Design

According to Burnett and Evans (2016), by applying the principles of DT, it is possible to better design and build a meaningful life. They use scientific data from positive psychology and neuroscience to support their claim. The approach adopted by Burnett and Evans supports the idea that career development should go beyond looking for a job. For this, they propose an approach based on the principle that an individual can think like a designer and build or design not only a career, but also their life. As the economic and social environments change rapidly, it is important to adopt the curious attitude of a designer and to have a bias for action to quickly imagine, design, and test new alternatives. According to these authors, when the individual wishes to imagine possible futures, there is no reason to be skeptical because no one knows what the future would look like. This notion relates to Zittoun and de Saint-Laurent (2015) idea that the possible in self-actualization can be thought of as *life-creativity*. Burnett and Evans suggest starting with adopting curiosity as a state of mind instead of skepticism to be more generative. In addition, as the future is uncertain and one cannot plan for what is unknown, the authors consider that the best way to design one’s life is to have a bias for action. Taking action consists in “making prototypes” and testing them quickly to make sure that reality matches to the

idea that one has. They like to say that no life plan survives the first contact with reality.

The life design process includes the five stages of DT with an additional stage called “acceptance.” In fact, the first step is to agree to participate in a life design workshop because more often than not people complain about their work, hate their boss or don’t like their life but do nothing to remedy it. Accepting therefore means that we are interested and motivated to find solutions. They also describe several tools that can be used to help participants build a life worth living such as the dashboard, the moral compass, the good time journal, AEIOU (for Activities, Environments, Interactions, Objects, Users), odyssey planning, immunity from failure, mind-mapping, and more.

In the context of life design, empathy consists of understanding yourself and identifying your worldview (lifecycle) and workview, as well as the adequacy between these two visions. The alignment of these two visions gives the individual a “moral compass” and allows the person to refer to it. As design thinking is known for its ideation phase, life design uses several tools to create different alternatives of the future, such as the Good Time Journal and Odyssey planning. The prototype/test cycle is about prototyping experiences to discover more about a job, to feel what it would be like to be a writer, for example. Burnett and Evans (2016) like to say that prototypes are a way of sneaking up on the future. In this way, DT provides a well-articulated approach to imagining and planning toward possible future identities and pathways for the self.

Conclusion

According to Don Norman (2013, p.219), “design thinking is not an exclusive property of designers – all great innovators have practiced this approach, even if unknowingly, regardless of whether they were artists or poets, writers or scientists, engineers or business people. But because designers pride themselves on their ability to innovate in finding creative solutions to fundamental problems, design thinking has become the hallmark of the modern design firm.”

Some researchers highlight several challenges that are related to the main core themes of DT, for example, user focus, problem framing, and iteration. In the past few years, users have been increasingly involved in the development of new products. This is mainly motivated by the idea that users have knowledge of their own needs and are able to develop solutions that fit those needs. The challenges and limitations at both individual and organizational levels in implementing DT entail a need to develop the ability to discard out-dated mental models and to adopt radical innovation mindset. As Daniel H. Pink (2006, p.2) considers “the future belongs to a very different kind of person with a very different kind of mind – creators and empathizers, pattern recognizers, and meaning makers.” To benefit from DT, one needs to think and act like a designer to a certain extent and not “forget that people don’t buy just utility. People buy meaning and emotion and symbols” (Verganti 2010). In considering DT as a pathway in the field of the possible, that notion doesn’t relate just to goods and services but also to the life course we invest in every day.

Cross-References

- Avatars
- Anticipation
- Creating the Future
- Creativity
- Foresight
- Possible of Design
- Virtual Reality

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Desire

► Wish

Determinism

Roy F. Baumeister^{1,2}, Cory J. Clark³ and Stephan Lau⁴

¹University of Queensland, Brisbane, QLD, Australia

²Florida State University, Tallahassee, FL, USA

³University of Pennsylvania, Philadelphia, PA, USA

⁴Hochschule des Bundes für öffentliche Verwaltung, Berlin, Germany

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Determinism · Prediction · LaPlace · Possibilities · Future · Free will

Definition

Determinism is the theory that all events in the universe are completely caused by prior events, such that every occurrence was inevitable from the start of the universe, ranging from the intricate blast of every supernova, to the precise path each leaf travels as it flutters to the ground, to the very words we are writing in this entry. It is a brilliant, elegant, controversial, and challenging theory. Philosophers and scientists disagree profoundly about whether determinism is true and whether it applies to human behavior. Given the controversial nature, we stipulate our own views at the outset. The first author (RFB) was a determinist for many years but eventually defected, so he now disbelieves in determinism. The second author

(CJC) believes all occurrences are caused by prior events, but that randomness likely interferes with inevitability or the possibility of perfect prediction of future outcomes (e.g., Clark 2020). The third (SL) thinks that strict determinism is a powerful methodological tool to reduce uncertainty because it creates inevitabilities by assuming them for *any* relationship between events. However, this tool is also an idealistic doctrine from the view of psychology, as psychological science did in reality choose a different path, creating a successful methodology that is essentially incompatible with the demands of strict determinism.

Determinism is included in this Encyclopedia because it has profound implications for the notion of possibility. Readers wishing a longer, more philosophically sophisticated treatment of the topic may consult Hoefer (2016). In its strictest form, determinism denies that anything is truly possible that does not actually happen. Individuals facing a choice may think that two or more options are truly possible, but they are mistaken, according to determinists. What people end up choosing was the only possible option they could have chosen, and this was determined long before they were born. Their (false) belief in alternative possibilities is however a legitimate part of the causal chain leading to the decision.

Deterministic theories have been developed in many cultural and conceptual contexts. Nevertheless, the definitive and most influential statement was made by Pierre-Simon LaPlace (1814/1951) in the early 1800s. He was a statistician, which is ironic because determinism undercuts one of the key assumptions of probability theory, namely that multiple outcomes are possible from the same situation. LaPlace is important for having formulated a scientific form of determinism, but there were certainly religious and philosophical versions that preceded it. The Calvinist doctrine of predestination is quite similar: God knows everything and therefore already knows everything that will happen in the future – so you can only act out what is inevitable rather than changing or choosing anything.

LaPlace observed that in principle it would be possible for a highly intelligent supermind to calculate every future event with complete accuracy if it possessed a complete knowledge of the

disposition of every particle in the universe at present plus a complete knowledge of the laws of nature. (The supermind was not meant to invoke a god; today, one would imagine this as a computer, but of course LaPlace died long before computers were invented.) Indeed, if one could possess such complete knowledge of the arrangement of particles at any given point in time, plus a full and correct knowledge of all causal principles, one could unerringly calculate the state of the universe down to every particular detail at every point in the future or the past. Sometimes, this is formulated as treating the universe as a giant machine, grinding along exactly as programmed, one moment after another. Everything that happens today was inevitable since the origin of the universe, or possibly a few seconds thereafter. As Hoefer (2016) explains it, a supersmart demon who knew the full state of the universe a hundred years before your birth would be able to predict unerringly every moment of your life, including all your thoughts, feelings, and actions. Hoefer explains further that this is why determinism infuriates some people and gives perverse satisfaction to others, because it depicts the human being as a marionette or puppet, pulled about by external causes without any real say in the matter.

LaPlace surely did not think such calculations would be made any time soon, in practice. In fact, recent calculations suggest the universe could not contain enough computing power to make those calculations (Wolpert 2008). The implication of LaPlace's idea is not that people will soon be predicting the future with complete accuracy, but that it would be theoretically possible with the right data and equipment. The profound implication is that there is only one possible future. The assumption that there is a single correct answer requires that every future event be inevitable. If multiple future outcomes were possible, the supermind could not possibly calculate with completely confident accuracy which one will become real. Thus, ultimately, the category of what is possible is the same as what actually happens.

The illusion of multiple possibilities is an important feature of determinism. If everything in the future is already determined, then the

human sense that one could choose between multiple actions is illusory by necessity. Determinists emphasize *epistemic possibilities*, defined as possible in terms of thinking, but not possible in physical reality. That is, a person might believe subjectively that multiple possibilities exist, and the person's belief in multiple possibilities might have a genuine causal influence on the person's behavior. There is no genuine reality of mere possibility in the physical sense, but there is a subjective (and illusory) belief in multiple possibilities, which is part of the deterministic causal chain. For example, tonight you lock your home's doors to prevent criminals from entering to burglarize and terrorize your family. In reality, the criminals do not break in tonight, and that outcome was inevitable long before you were born. But your mistaken belief that such an invasion was possible caused you to lock your doors. One can think that even if you had not locked the door, you still would not have been burglarized. Nevertheless, it has been inevitable for many centuries that tonight you will lock the door and that no criminals will invade your house.

Determinists also accept that unrealized physical possibilities can be contemplated – but only based on the assumption that the entire history of the universe were different, dating back to its origin with the Big Bang. They acknowledge that people can have thoughts of the form that “If X were not true or had not happened, then Y would not be true or would not have happened.” For example, if Sam had not left his ice cream sitting out in the sun while he went indoors for a long phone call, then it would not have melted. Of course, given the reality of our universe, it was inevitable that Sam would leave it sitting there, and nothing else was possible.

Appeal of Determinism

Determinism appeals to many thinkers for multiple reasons. (For a passionate modern assertion of determinism in social psychology, see Miles 2013; note critical response by Vonasch and Baumeister 2013.) First, it is a highly elegant theory. It assumes that causes lead inevitably to

their consequences. This assumption is consistent with observations in some of the simplest experiments. For example, if a scientist mixes two substances in precise proportions in a sterile test tube, particular reactions are highly predictable. Once someone accepts the premises of determinism, which are deceptively uncontroversial, there is almost no way to avoid their sweeping conclusions. Determinists propose that the laws of nature would have to be overturned in order for their vision of the world to be refuted.

A second aspect of the appeal of determinism is that it runs counter to everyday and naïve intuitions. It thus holds out the promise of freeing people from huge illusions. (Or, even if people cling to their illusions, determinists are able to feel superior to them based on supposedly knowing something that others do not.) People may think they make choices in an environment that genuinely contains multiple possible alternative illusions – but they are at least partly mistaken, according to determinists. What they end up choosing was always the only option they could ever have really chosen. Their subjective impression that they could go either way is mistaken. Thus, determinism is appealing because it enables believers to think that everyone else is mistaken many times every day in the belief that the future contains multiple alternative possibilities. In a simple example, the restaurant patron scans the menu and subjectively but mistakenly believes that all these options are possible, and he or she merely must decide which of these options is the one to choose. One could choose the beef, or the chicken, or the fish. In reality, to a determinist, it was unequivocally determined long back before 1800 that today you would select the chicken, and the possibility of selecting fish or beef was an illusion.

Third, determinism may be appealing because it appears to reduce uncertainty. In a deterministic world, it would be theoretically possible to learn all of the causes in the universe, how they will interact, and what the future holds. Human behavior and future outcomes are theoretically predictable and explainable. The appeal of determinism may be much like the appeal of a psychic: It appears to reduce uncertainty about the future.

Indeed, Baumeister and Lau (2021) found that junior psychological scientists tended to endorse determinism more than senior scientists. Uncertainty is an ubiquitous and critical adaptive challenge (e.g., Hirsh et al. 2012), and likely very prevalent in a taxing context like starting a scientific career. We therefore suppose that stronger beliefs in determinism might be just that – an adaptive mechanism that helps to cope with uncertainty in an already overcomplex context.

Alternative to Determinism

The alternative to determinism is the reality of mere possibility: that some things are genuinely possible at one time but in the long run will never become reality. For this *Encyclopedia of Possibility*, the alternative is especially important. To determinists, alternative possibilities are illusory (though they may enter into the causal chain: Someone might mistakenly believe that something is possible and on that basis take steps to prevent it). Yet the mistaken belief in alternative possibilities is a legitimate and genuine part of the causal process.

Determinism denies the reality of mere possibility, because that reality would imply that the causal processes in the universe do not fully determine the future, instead leaving open multiple alternative outcomes as possible. The opposite of determinism may be the multimaybe matrix (see separate entry), which treats the future as a set of alternative possibilities, each of which may or may not come true (Baumeister et al. 2018).

A world governed by probabilities would be incompatible with determinism. In particular, determinism sees causes as ensuring their effects, with no exceptions (unless overridden by other causes). In contrast, many social scientists believe that many causes are probabilistic. That is, a cause does not produce an effect but merely changes the odds of its happening. Such analyses do not fit well with Newtonian physics, but nearly all the causes described in psychology, economics, and indeed all the social sciences appear to operate probabilistically. The determinist could argue, however, that this appearance of probabilistic causation comes from the complexity of

psychological events, which can be affected by many different causes. In other words, probabilities are only useful in the social and behavioral sciences because we have not identified or do not have the right tools to measure all of the causes, and so models are imperfect. If we did know all the causes and have the right tools, probabilities would cease to be useful (all outcomes would either be 0% likely or 100% likely).

The deterministic doctrine that probabilities and statistics merely reflect human ignorance rather than objective reality shows the way to one possible test. Over time, the progress of science has reduced human ignorance considerably and should continue to do so. As a result, the use of statistics in science should diminish over time. It should therefore be possible to study long-term trends in scientific methodology to ascertain whether use of statistics steadily decreases (as determinists would predict), remains the same, or increases.

Relevance to Free Will

Determinism has been of particular interest to philosophers in relation to free will. Free will is often defined in terms of the ability for the individual to act differently in the same situation, thereby potentially leading to different future outcomes – precisely in contradiction to determinism, which holds that only one future course is possible. In psychology, determinism takes the form of asserting that a person's behavior in a given situation is an ineluctable outcome of the person's genes and environmental influences (e.g., reinforcement history). Thus, although the person has the subjective impression that he or she could act in different ways, that is an illusion. What you do is inevitable and indeed has been for a long time, according to determinism.

Elaborate reasoning has found ways around that seeming contradiction. The majority of philosophers today believe that free will is compatible with determinism. They treat free will as part of the chain of causal processes that produce the predetermined result. People may be mistaken in believing that they are capable of making various

alternative choices, but that mistaken belief is a vital part of the deterministic causation of what will inevitably happen. And to some scholars, that level of agency warrants the term “free will.”

Nevertheless, people who have not read deeply in philosophy continue to regard determinism and free will as incompatible (rejecting determinism and upholding free will; Clark et al. 2019). The simple intuition is that determinism rules out free will. If free will means being able to act differently in the same situation, this contradicts the deterministic assertion that one could not act differently in that situation.

Survey Results: What Do Psychologists Believe?

A survey of psychologists' beliefs was conducted by Baumeister and Lau (2021, under review). The survey was offered to the entire membership of the Society of Personality and Social Psychology, and responses were recorded for all who volunteered. Admittedly, the sample who furnished data may not be representative of the scientific community as a whole, especially if people who hold one view are more likely than their opponents to agree to complete the survey.

Briefly summarized, we found a wide range of opinion among social/personality psychology faculty and graduate students. Younger researchers were more sympathetic to determinism than older ones. Most opinions were tentative, and the most intermediate response was the most popular. For example, 23.7% of the sample reported being completely undecided (the midpoint on an 11-point scale) about the statement that “determinism is true.” Thus, many psychologists do not have strong opinions on the topic, but some do, and there is no consensus.

Criticism of Determinism

Some of us have written sharp criticism of determinism from a psychological-science standpoint (Baumeister and Lau 2021). We acknowledge the philosophers have refined their views to a very

advanced level, but our concerns are somewhat different.

Our main point is that determinism is badly unsuitable as a conceptual basis for (social and other) psychological theories. The central point of determinism is inevitability: In each situation, only one outcome is possible. In sharp contrast, most of the phenomena studied by human person-focused psychologists are essentially based on situations having multiple possible outcomes. For example, psychologists study threat: A threat is something bad that might happen but also might not happen. Similarly, success is only meaningful if failure were possible. Negotiation and compromise can only occur under conditions in which there are multiple possible outcomes. The list goes on and on.

The point is that determinism blinds researchers to the key thing they seek to explain, namely how agents respond to situations defined by multiple possible outcomes. One can delineate a theory about how the agent processes information, interacts with others, and responds to changes in the situation. Researchers can then collect data to test and refine their theory. Then along comes the determinist to say that the final outcome was always inevitable anyway. That is not at all helpful to the theory. Although determinism perhaps cannot be ruled out definitively, its adoption would hinder more than it would help prediction models in the social and behavioral sciences. And where a theory leads to worse predictions, it seems reasonable to question its accuracy.

We speculate that this may be why psychology does not seem to have any genuinely deterministic theories. Most theories invoke multiple possibilities. In parallel, the overwhelming majority of psychological studies merely show a small change in the odds of one response as opposed to the alternative – rather than finding that a cause guarantees its effect. Although a substantial minority of psychologists profess to believe in determinism, it is neither evident in their theorizing nor in their own data.

We also humbly suggested that determinism has two fatal flaws as a viable modern psychological theory anyway. First, the thought experiment

itself could not be done, because it violates relativity theory. LaPlace assumed you could have a single moment of the entire universe, as if it were in some context exactly the same time at every point in the universe. Of course, that was plausible back when LaPlace lived, during the French Revolution and Napoleonic period. Relativity theory did not appear for another century.

The other is that determinism ends up being circular reasoning. This becomes relevant if one can get past the problem of relativity. If there is for effective practice a single simultaneous moment for the entire universe, and the supermind had all that information, it would also need to know not only all the individual causal laws but also how these causes combine and interact, because some causes can override or alter the impact of others. The knowledge of causal laws would have to include what happens with each possible combination of causes. Because each moment of the universe is effectively unique, it presents a unique combination of causes. Therefore, the supermind would have to know what happens with precisely the layout of the universe at each moment. In essence, it would be predicting what happens next from the present moment based on its knowledge of what happens in a moment exactly like the present moment. That makes the reasoning circular: Based on knowing A, it can predict A.

Summary/Conclusion

Determinism asserts a very limited view of what is possible. It emphasizes that the future course of physical reality is inevitable and has been determined in advance for a very long time. It accepts the notion of epistemic possibility, that is to say, determinists know that people can imagine alternative possibilities – but nothing was ever truly, physically possible other than what actually happens.

Cross-References

► [American Pragmatism](#)

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Dialectics

José Antonio Castorina

Universidad Pedagógica Nacional, Universidad de Buenos Aires, CONICET (Consejo Nacional de Investigaciones Científicas y Tecnológicas), Buenos Aires, Argentina

Abstract

This entry aims to examine the features of dialectics when studied from the perspective of the psychological development of knowledge and its functions in the works of Piaget, Vygotsky, and Valsiner, where it is described as a novelty producing process. In these authors,

dialectics is understood both as a research methodology and as a constitutive part of the explanation of psychological development. In Piaget, the dynamics of dialectics and the possible are examined through the equilibrium theory of development, which includes dialectical inferences specific for epistemic constructivism and based on the interplay between undifferentiation, differentiation and integration. In Vygotsky, interpreting the dialectics of possible novelties in higher mental functions, particularly the zone of proximal development can be seen as a dialectical reorganization achieved through guided development, from a learner's real knowledge to what she can achieve with others' assistance, i.e., an actualization of potential knowledge. In Valsiner, the synthesis of opposites is the main feature of dialectical thinking, hence the “actual” is a construction from possibilities allowed by an earlier level of development in the interaction between an individual and their own semiotic world. It is argued that each author contributes to understanding the relations between the possible and actual, especially given the difficulties faced by each approach, and they all pave the way for new research questions.

Keywords

Dialectic · Development novelty · Dialectical inference · Synthesis · Possible · Actualization

In the history of philosophy, there is no single way of describing dialectical thinking, though the question has been addressed by philosophers ranging from Heraclitus and Plato to Hegel and the *Naturphilosophie*, continuing with Marx and different schools of Marxism, including Della Volpe and Sartre. More recent examples include Jameson and the philosophy of science of Bachelard, Bashkar, and Lewontin, among others. Dialectics has also been subjected to diverse critiques by figures like Foucault and Deleuze and certain analytic philosophers (Gadamer 2000; Jameson 2013; Harvey et al. 1996; Popper 1972).

Instead of contributing to this particular discussion, the aim here is to describe the different qualities of dialectics when used in the field of psychological knowledge, including studies on development, natural logic, semiotic systems, and psychological functions. In addition, the focus is on how the possible constitutes these systems of thought regarding its dialectics features. In this regard, highly influential authors in the field such as Vygotsky (see chapter ► [“The Possible in the Life and Work of Lev Vygotsky”](#)), Piaget, and Valsiner have used dialectics to guide their methodology and explain the process of development. Piaget and Valsiner, in fact, included an explicit analysis of the category. The qualities attributed to dialectics in this area are highly dependent on the problems addressed, the objects constructed in each field of phenomena, and the procedures used in the scientific investigation. In any case, the use of dialectics does not constitute a plain and simple *a priori* “application” of philosophical theses, nor does it take a single form. In fact, dialectics depends on the interplay between observable phenomena, methods, and theories in the methodology cycle of research (Valsiner 2012a, b). As an epistemic framework, it offers a broad context for specific ways to pose problems, produce investigations, and specify the processes of transformation in development.

In the context of this entry, the focus will be on how dialectical thinking is particularly well suited for examining the emergence of novelties, the main issue of development yet to be resolved. Aristotle (Ross 1964) was the first to make the distinction between the possible (or potential) and the actual, the two inseparable dimensions of all human action, because an act becomes effective when a potential is actualized. If activity is considered a development, these two dimensions are inextricable. While the act situates it in the realm of the real it, at the same time, invokes a set of possibilities that give our development depth. When considering the contingent character of the act in development, it also becomes necessary to examine it retrospectively. According to the authors mentioned, developmental psychology explores the potential for qualitative change in

development of and for the construction of new identities, concepts or functions. In other words, these thinkers research the processes of actualizing potential and even address the possible itself.

The Dialectical Perspective in Developmental Psychology

In essence, this entry proposes the hypothesis that there are “axiomatic” assumptions (Valsiner 2012a; Overton 2012; Castorina 2007) that intervene in the methodology cycle of psychological research, placing limits on the problems that researchers can and cannot consider. Mainstream research in psychology has been dominated by two different sets of assumptions. The first are ontological assumptions about the separation between the individual and the social and nature versus culture. The second are epistemological assumptions that split the theory of experience, or the meanings of behavior, or the values of facts. This epistemological framework has guided research, particularly that of neoinnatism, cognitivism, behaviorism, and, on occasion, contextualism (Overton 1998). Although it has not determined the outcome of investigations, it has conditioned them, and, on occasion, has prevented issues related to transformation processes from being discussed. This has forced researchers to investigate “the beginning of knowledge” due to believing in innate processes, or obliged them to treat individuals or behaviors as the main unit of analysis. It has also led to the deification of the “methods” of positivism and even the elimination of evidence “of the dynamic flow of the phenomena in research data” (Valsiner 2012a, b).

On the contrary, in works on developmental psychology by Piaget and Vygotsky, the components of experience are dynamically integrated with the world. This can also be seen in the socio-historical school of psychology and in cultural psychology (Valsiner 1997, 2006, 2012a, b). This focus, though still rare in developmental psychology (Valsiner 2012a), converges with the perspective of the contemporary sciences centered on open systems, which are characterized by symbolic or informational exchanges with their

particular medium (Overton 1998). Thus, it is postulated that a process of qualitative change would yield novelties in the processes under investigation, for example, systems of knowledge or psychological functions. In addition, what changes in a system are the relations between elements that make up a totality, for example, those which connect culture and intellectual activity. The source of the change here resides in the interactions inherent to the system, thus affirming their self-movement, and the contradictions are what provoke the creation of novelties (Bidell 1988).

This is a thinking strategy that makes dialectical interactions necessary, depending also on the specific focus, in developmental systems. On the one hand, this strategy is a relevant component of the methodology cycle during research that allows for a theory to be elaborated; on the other, dialectical processes are laid out as a crucial part of an explanatory theory of the production of novelties in social and psychological systems. In short, besides proving compatible with empirical investigations, dialectics is a valid tool to advance knowledge on the transformations of psychological systems and also to explain processes of change.

Piaget

Dialectics is, first and foremost, a methodology, as whenever Piaget addressed an issue related to development he included heterogeneity – and oftentimes, the opposition between the predicted properties – seeking to integrate them in the reconstruction of the dynamics of knowledge formation. Thus, for example, the notions of assimilation and accommodation can only be thought of in relation to one another (as occurs with schemata and observable phenomena; presentative and procedural schemata; subject and object) and must be considered as a dynamic unit, recognizing intrinsic oppositions, which are emphasized during the actual genesis of knowledge.

Second, the systematic use of this approach is “achieved” in Piagetian psychological theory since the object of the research incorporates a

dialectical process. In other words, in order to elaborate the specific issues surrounding the emergence of novelties in the formation of logical systems, it is necessary to recognize the dialectical processes at work within development psychology. In this regard, unlike logical contradictions, natural contradictions arise from questions posed by the subject which she is unable to resolve beforehand. For example, a child who attempts to explain how to balance a sliding scale thinks about the weight factor separately and is struck by the contradiction. For the child sitting before the scale, a single action can cause different effects since, when weight is added to one side, that side will generally go down but not always, depending on the amount of weight on the other side, and the distance of each weight from the fulcrum. In other cases, an action and counteraction do not compensate for one another: when weights are added to a pan that already has other weights in it, it will go down, but the same may also occur if these weights are removed. In general, the inability to think of how the physical properties relate to one another causes these contradictions. Later, the child comes to interpret the problem in terms of not only weight but each weight’s distance from the fulcrum, also referred to as its moment. As this occurs, her understanding of the concept is progressively relativized and her point of reference expands. Therefore, a heavier weight at a shorter distance can be offset by a lighter weight farther from the fulcrum (Piaget 1974).

However, these contradictions – from the perspective of constructivist epistemology – provoke but do not produce cognitive development (see chapter ► “Possible in Human Development”). They are merely an instance within a broader process of equilibration in knowledge systems. The reorganization of these systems can be explained, first and foremost, by “desequilibration” between affirmations and negations that provoke conflict. A re-equilibration later becomes necessary on the part of the subject, who must offset the affirmations with the negations through “reflecting abstractions,” constructive generalizations and the invention of new possibilities (Piaget 2001, 1984; Campbell 2009). Contradictions are part of a joint

process that requires constructive mechanisms in order to produce cognitive “novelty.”

In one of his last works, *Les formes elementaires de la dialectique* (1981), Piaget reconsiders dialectics in an original way, approaching it as a (non-deductive) inference that leads from a conceptual system to another, a more advanced one, which cannot be reduced to its prior state. Thanks to this “inferential side of equilibration,” which corresponds to the systemic interaction that yields the cognitive novelty, one level of attributing meaning is transformed into another. These inferences can range from undifferentiation to differentiation and conceptual integration, the articulation of primarily independent knowledge systems, the constructivist modification in subject-object interactions, and proactive and retroactive inferences in knowledge.

Thus, in terms of the types of inferences, the processes of undifferentiation, differentiation and integration are perhaps the most relevant to the study of the genesis of knowledge. A small child looking onto a mountain range imagines that if she were on the other side, it would look exactly the same. In other words, she is unable to differentiate between perspectives and only becomes able to do so when she progressively builds an operational system of perspectives that allows her to consider simultaneously the reciprocal relations at work. It is thus possible to speak of an inferential process that moves from the undifferentiation of properties to the differentiation and integration of perspectives.

In summary, the framework of dialectics has guided research in developmental science, serving as an assumption within the methodology cycle and as a central component of the theory of equilibration. The “inferential side” of dialectics, which reveals the construction of cognitive novelties, has been emphasized in psychology theory. In his approach to equilibration, Piaget suggests that certain “novel” states of knowledge surpass prior states.

The Possible as a Construction

According to Piaget, in order to overcome empiricism and epistemic innatism, it is necessary to explain “novelty construction” (see chapter “► Novelty”) through the theory of equilibration

between assimilation and accommodation, in the interaction of subject and objects. Yet this construction can also be considered in terms of the elaboration of that which does not yet exist in the virtual state “of the possible” that the subject must actualize. To the detriment of empiricism, Piaget affirms that the possible cannot be observed; it is, instead, the product elaborated by the subject as she interacts with the objects. In this regard, the possible is not static and things “become possible” (Piaget 1976) when they reach the moment in which they can be actualized. In terms of innatism, Piaget affirms that the possible does not precede the moment in which actualization occurs, as in the possible is not given beforehand, but it is a byproduct of becoming a psychological subject. They are not predetermined, as shown in studies revealing the qualitative changes that occur in formulating the possible among children aged four to twelve. Without a doubt, what underlies these studies is the idea that “the set of all possibles” is an antinomy given that “all” is a possibility impossible to define since it is ceaselessly increasing (Piaget 1976). The only option is to consider the possibilities that can be inferred from an operational system, that is, the possible perspectives that can be conceived from a structure of spatial perspectives, seen earlier. Yet it is the subject who elaborates the possibles, or to put it bluntly, the new possibles. From the constructivist point of view, possibility unfolds as the subjects’ action is in its course, outside this realm, there is little point in discussing “the possible.”

Studies have addressed how subjects can find the greatest number of variations in an action, for example, finding all the ways possible to cut out a square; arranging blocks so as to have a better view of one side; or building a geometrical figure like a triangle in different ways (Piaget 1981). While small children can only imagine a limited number of variations, older children may go so far as to claim that there is an “infinity” of variations. Now, how can this multiplication of the possibilities be explained? The answer lies in distinguishing the presentative schemes (schemes generalized in different contexts), which deal with the simultaneous and articulated characteristics of objects, like the concepts in a classification. They

stand apart from contexts and procedural schemata, which are context-dependent and consist of the means applied towards a goal, for example, to solve problems and attain success in this realization. The opening of new possibles depends almost entirely on the application of these schemata, in the belief that good results can be achieved, though there are also errors (unforeseen or undesirable outcomes from action) between the possibles, which allows the unpredictable and incalculable.

In terms of dialectical processes, the inferences children make range from undifferentiation to differentiation and the integration of the possible, the necessary (understood as a process of deduction carried out by the subject), and the real. This is an inference that moves towards a conclusion not contained in the premises. At the first level, there is undifferentiation between them; the real is assimilated to the schemata and the only possibilities are some observable variations. At the second level, the assimilatory schemata are multiplied and the procedures come to bear on the objects, producing re-equilibrations and differentiations of new possibilities. Finally, these possibles, in their heterogeneity, give place through intellectual operation abstractions, in a relative way, to “closed” systems and reach the level of logical necessity required. The main problem with this perspective is that it does not analyze the conditions of the sociocultural context in which possibilities are constructed. In other words, cultural mediations must be considered when analyzing the subjects’ constructive activity, along with the fact that such activity occurs in their interactions with others (Martí and Rodríguez 2012).

Vygotsky

According to his principal hypothesis, dialectics in psychological research should play the same role as in Marx’s *Das Kapital* (Vygotsky 1927/1991), serving as model to the genetic study of how to approach a research object’s movements, reconstructing it according to its history and the complexity of its bonds. The main problem for Vygotsky was how to build the units of analysis

requires in order to transfer this method to the field of psychological research: a process of development as a totality would be studied in terms of the unit and the mutual opposition of its own processes. Among others, Vygotsky identified the meaning of words, differentiating between two planes of language, but in their interaction. The inner meaning, or the semantic aspect of language, is associated with social communication processes, with external audible speech. In contrast to what occurs in a fragmented approach, the language unit is not homogeneous but complex, consisting of relations that avoid the isolation of the inner and external components and of the social and individual meaning of the word. The meaning of the word includes relations and contradictions such as the tensions between the external and the inner, individual and society (Vygotsky 1933/1994).

Vygotsky (1927/1991; 1931/1995; 1933/1994) proposed an explanation of the appearance of higher forms of regulation, identified with the mastery of the semiotic means. His main argument is that the human activities system is “open” in the sense that the organic activity is articulated with the use of tools, basically signs. It is important to note the novel features of this system, which combine biological and cultural processes. The two systems are jointly developed, forming a third and unique system of activity which defines the dialectical unit of tensions between the natural and cultural areas of ontogenetic development. This “complex synthesis” is also the result of a genetic and comparative methodological perspective.

In developmental theory, higher psychological functions are developed according to a dialectical process that can be attributed to Hegel, a process “in itself,” “beyond itself,” and “for itself.” Studies of aborted or unsuccessful movements of a baby reaching for an object show that another person later interprets this movement as an indicative gesture and then hands the object to the baby. Ultimately, the baby learns to relate her ineffective movement with the entire situation and comes to consider it an indication for someone else to pass her the object. In other words, the baby becomes herself through others, in a Hegel-inspired

sequence, to provide insight into how subjectivity takes shape and how concepts are formed from the perspective of cultural appropriation in one's relationship with others.

To interpret the meaning of the units of analysis capable of capturing the complexity of such phenomena, Vygotsky's early work on artistic production (1972) also proves insightful. This work reveals that the idea of the functional system in developmental psychology is already present in the idea of the literary system as a dynamic unit of form and content. Later, the functional system considers the effects of this dialectical relation on the aesthetic reaction and also the cathartic processes as described by Aristotle. In other words, the semiotic study of artistic production anticipated that of higher psychological processes.

In Vygotsky's last work, experience – the “live-lihood of meaning” – is an original unit of analysis and also constitutes an affective synthesis of the individual and her cultural surroundings. Experience expresses the characteristics of the body and the context, allowing a certain way of appreciating and signifying reality to be interpreted in a unit of sociocultural and personal aspects. In this interplay of negotiations and resistance, each person appropriates culture in her own way. Furthermore, experience can also be considered in terms of creating and recreating culture, a “novel” synthesis of participative appropriations in symbolic spaces. The author even proposed an empirical model, though it was never finished (Valsiner 2015).

Possibility as Potentiality

The question of the possible can be tentatively addressed in terms of potentiality, provided the formation of potential concepts is considered along with the dialectics of the zone of proximal development (ZPD) (see chapter ► “Zone of Proximal Development”) – the movement of learners in between their potential and actual knowledge.

In general terms, the formation of “scientific” concepts from complexes traverses a level of pseudoconcepts, a form of thinking in complexes that, as such, already contains the nucleus of the genuine concept that is developed within

(Vygotsky 1993/1994). This thinking in complexes can be understood as a preliminary step for conceptual thinking. Whereas the former is bounded by objective connections in-between objects, the latter is abstract and based on logic forms of interrelation. The objective meanings of speech are integrated with the subject's appropriation processes, contradictory elements in a changing functional unit. Conceptual appropriation involves a synthesis of contradictory elements, a sort of fluctuating functional unit during development.

To form such a concept it is also necessary to abstract, to single out elements, and to view the abstracted elements apart from the totality of the concrete experience in which they are embedded. In the formation of a genuine concept, joining is as important as separating: synthesis and analysis are mutually presumed, and during the development of abstraction, the grouping of objects based on maximum similarity is substituted by grouping based on a single attribute (e.g., only round objects). This abstraction destroys the concrete totality of the qualities, thus becoming accessible by joining the characteristics based on different criteria, those of the scientific concept. The potential concepts are precisely the predecessors that make scientific concepts possible. Due to their prevalence even in thinking in complex, the abstraction of a quality is unstable. It does not hold a favorable position and easily cedes its domain to other qualities. Only the domain of abstraction – combined with advanced thinking in complexes – makes it possible to progress towards the formation of true concepts.

Later, the separately abstracted qualities are synthesized anew in an abstract way and the scientific concept emerges, becoming the principal thinking tool. In summary, elementary mental functions participate in a dialectical combination guided by the use of words, synthesizing the qualities and symbolizing them through a sign. Finally, Vygotsky (1933/1994) characterized the zone of proximal development in dynamic terms, describing how children's development and cultural resources are mutually dependent. The ZPD is thus a process of radical change or restructuring of what the individual knows, starting at a stable

moment and then traversing a certain level of chaos and disorganization of the function, like language, play, or concepts. Novelty is a dialectical reorganization of the development process guided by teaching-learning, going from what one knows to what one will know “with someone else’s help.” The new synthesis can be considered a path out of crisis, giving way to new forms of the higher function. ZPD is a theoretical term that covers a set of immediate possibilities, though only one can be actualized in development. With this outcome as a starting point, other possibilities cannot be known (Valsiner 1997). Yet Vygotsky’s work did not adequately address the specification required for the investigation of the transition from potential to realization, or its “operationalization.” This is, perhaps, because the author’s works on maturity did not sufficiently emphasize the dialectical synthesis, the only process capable of revealing the actualization of potential development (Valsiner and Van der Veer 1993).

Valsiner’s Approach

As in the case of Piaget and Vygotsky, the dialectics of development for Valsiner is, primarily, a perspective on how science can be done (Valsiner 2012a, b). Focused on the methodology cycle, the dialectics of development cannot be reduced to research “methods,” particularly quantification. Instead, a process that includes ontological assumptions, methods, phenomena, theory, and data built by the holistic researcher. This methodological cycle treats psychology as a whole, integrating components from empirical phenomena to philosophical assumptions. In this sense, a whole-some knowledge construction cycle recognizes where knowledge is faulty, and this constant recognition leads to new knowledge. Developmental psychology studies the appearance of new totalities based on prior totalities through the resolution of conflicts or contractions that are crucial for the methodology cycle. Clearly inspired by Hegel, the aim is the emergence of superior totalities, based on the inner tension of other systems, positioning qualitative development at the heart of developmental psychology.

Valsiner (2012a, b) acknowledges that different schools within developmental psychology recently adopted a dialectical focus, though the unit of the opposites proposed in these schools have not successfully produced a creative synthesis: one of the opposites dominates, or the opposition is sustained indefinitely and does not allow novelty to emerge. In my view, this limitation does not correspond to Piaget’s description of natural contradictions or dialectical inferences; obviously, it does not fit with Vygotsky’s thinking either, though it is characteristic of Anglo-Saxon interactionism (Valsiner 2012a). Now, the secret to dialectics cannot be found in the harmonious tension between the thesis (A) and its antithesis (non-A), a dialectic with a dual structure so typical of the Anglo-Saxon world (Valsiner 2012a) where finally a choice is made between one of the two. In contrast, it is necessary to sustain a nonharmonious tension between A and non-A, which becomes a necessary condition for a creative but interminable synthesis to overcome the tension. The synthesis occurs when the tension between A and non-A reaches a “breaking point” or “double negation” equivalent to a qualitative jump. Thus, a person experiences tension in relation to one object or another, leading to a reorganization of her affective or aesthetic life, or another generalized feeling. Opposing feelings cancel each other out and the new more generalized feeling appears as an intuition or an opening, though it can also render the appropriation of the generated affect impossible. In summary, synthesis is the most relevant phase of dialectics for this version of development, since it mainly deals with novelty.

On the other hand, Valsiner’s dialectical approach is principally a theoretical outline that lacks adequate operationalization, as was the case for Vygotsky’s ZPD. In any case, certain levels of experience are considered in the construction of dialectics in the theoretical investigation, which is not derived from pure *a priori* abstractions. In this regard, his approach is similar to that of Piaget or Vygotsky. The researcher, however, should seize on the ambivalence that characterizes these processes since they produce the tensions between opposing processes and the ruptures that allow for restructuring.

Potentiality and Actuality

In terms of the distinction between the possible and the actual, a study of psychological development requires examining how an actual event – that may well have not occurred – is constructed through a semi-open-ended set of possibilities in cases where the aim is to capture novelty, something Valsiner has insisted on (along with Piaget and Vygotsky, each from his own perspective). On the contrary, the failure of existing psychology to explain this transition has been evident: psychology has addressed how the actual occurs but without relating this to the possibility of it occurring or to what could but will not necessarily occur. In this regard, cognitive psychology research procedures take the actual as a performance, as a derivation of “competences” or as individual heritage, separated from its contextual conditions. Clearly, as discussed earlier, this argument contradicts Aristotle, using potentiality to make the act evident, as if development were pre-formed.

In contrast, when thinking about dialectical development, the actual is a construction from the possibilities permitted by an earlier level of development, understood as a system of the organism’s interactions with the medium or of an individual’s interactions with the semiotic world in irreversible time (Valsiner 2011). At a relatively late stage of this interaction, a range of possibilities for the elaboration of new functions appears.

Valsiner (2006) sets the prediction of performances as future events – a prediction that corresponds to information processing theory – against the production of novelties, which supposes the unpredictability of developmental paths. Novelties are only produced if development is defined as a constructive transformation of the form or the functions in irreversible time, through processes of exchange and the interpenetration of the organism and the medium. These can be a small expression of a set of possibilities stemming from prior states in the interaction. The author considers that these prior states enable certain paths to transformation, though there is never an infinite set of possibilities. Furthermore, there are cultural signs that act as inhibitors or promoters of

dialectical transformations, which occur under certain conditions. Therefore, it is impossible to predict in detail future performances based on prior ones.

As a result, the complex interactions and interdependence of the organism and the world must be considered in the contexts in which they occur (Valsiner 1997). Likewise, the hypothesis is that the dialectical perspective, by taking on the tensions of opposites, gives way to the synthesis of an “unpredictable” novelty. This contradicts the mainstream belief that psychology is a science dealing with mutually exclusive functions (like child–parent attachment or the lack thereof), instead of the unity of opposites, a science that seeks control and prediction of behavior (Valsiner 2012a).

Conclusions

Dialectics is basically understood here as a perspective that allows different issues of development to be explored, not as the “application” of a philosophical thesis. The range of analyses can be seen in Piaget’s, Vygotsky’s, and Valsiner’s approaches to thinking about the possible and the actual in development. All of these perspectives leave unresolved issues that should be analyzed.

In Piaget, dialectics is presented as a methodology in more classic terms but stands out from Hegelian dialectic in that it examines not only the inferences that stem from contradictions but mainly those that stem from constructive processes. The possible is seen from an epistemological perspective, contradicting innatist or preformationist perspectives in which the possible precedes its cognitive construction. Similarly, the epistemological approach contrasts with empiricist hypotheses of what is already given in the observable world as a construction that can be articulated with the necessary and the real in a process. The dynamic of the possible and the actual is interpreted from the theory of equilibration and associated with dialectical inferences, particularly the process of undifferentiation, differentiation and integration. Its studies, however,

have a serious weakness: they do not include culture or semiotic aspects in the elaboration of the dialectical framework.

In the case of Vygotsky, dialectics as a methodology and its realization in the theory of development follows Marx “stand on its feet” stance over Hegelian propositions (human activity-based dialectics) elaborating a systemic explanation of the novelty of higher functions. With regards to the possible, the transformation of everyday concepts includes simplifying abstractions that constitute, on the one hand, a potential instance for scientific concepts. A student’s real knowledge is, on the other hand, transformed into what she can do with someone else’s help. Therefore, the ZPD is characterized by the transformation of the potential into an act and involves dialectics of the dimensions not fully elaborated in this investigation.

In Valsiner, the tensions between opposites are overcome by the synthesis, which gives way to novelty. This is the core of dialectical thinking and it is entirely different from the reiteration of contradictions or non-resolution in current interactionist thinking. In his hypothesis on the passages from the potential to the act, the question of operationalization – the specification of the conditions under which possibilities become qualitative changes – should be addressed in psychological research on development.

Cross-References

- [Novelty](#)
- [Possible in Human Development](#)
- [The Possible in the Life and Work of Lev Vygotsky](#)
- [Zone of Proximal Development](#)

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Dialogical Self Theory

Hubert J. M. Hermans

Radboud University of Nijmegen, Nijmegen, The Netherlands

Abstract

Dialogical Self Theory studies the self as a “society of mind.” It is neither a mini-theory nor a grand theory, but rather a “bridging theory.” As such it crosses the divisive boundaries of disciplines and subdisciplines so that new and unexpected linkages between these disciplines are created. This article starts with sketching the historical roots of the theory. The central part outlines its main tenets and core concepts. Finally, examples of research methods and fields of practice, inspired by the theory, are presented.

Keywords

Dialogical self theory · Society of mind · Self-society dualism · I-position · Meta-position

Historical Roots

Dialogical Self Theory (DST) (Hermans 2018; Hermans and Gieser 2012; Hermans and Hermans-Konopka 2010) links up two basic concepts, self and dialogue, that have their roots in different psychological or philosophical

traditions. The self goes back to the American pragmatism of theorists like William James and George H. Mead, while dialogue is a central concept in the European tradition, mainly in the works of Mikhail Bakhtin and Martin Buber.

Usually, self and dialogue are seen as different on the internal-external axis. While the self is considered, at least in Western traditions, as a reflexive concept that refers to processes happening “internally,” that is, within the person, dialogue is conceived of as taking place “externally,” that is, between a person and another person who is located outside. By bringing the two concepts together in the composite notion of “dialogical self,” the external is transported to the internal, and, reversibly, the internal is exteriorized to the external. In this way, the self is no longer reified as an “entity in itself” but as a process that is intrinsically relational. As a consequence, the self has no existence separate from society but is *part* of the society. Stronger, the self becomes a “mini-society” or, to borrow a term from Minsky (1986), a “society of mind.” On the other hand, society is not conceived of as “surrounding” the self and having an impact on it as an external “determinant” but as a society-of-selves. It is composed of individuals and groups in communication that have the potential of co-constructing and innovating society on its way to a largely unknown future. An important consequence of this view is that changes and developments in the self automatically imply changes and developments in society at large, and, vice versa, societal changes are directly modifying the self. Self and society are not mutually exclusive but inclusive, and the dialogical self represents and creates communication bridges between them.

Definition of the Dialogical Self

In a most succinct way, the dialogical self can be conceived of as a dynamic multiplicity of *I*-positions in the society of mind (Hermans and Hermans-Konopka 2010). As these positions can be voiced, they enable individuals to be dialogue with the positions of other individuals and groups and, at the same time, with other positions in the

self. In this view, the I has no existence in itself but emerges from its dialogical relationships with the (social) environment and is bound to particular positions in time and space. From a spatial point of view, the embodied I is involved in processes of *positioning* and *counter-positioning*. When the I positions itself, there is always a counter-position, another person or another part of one's self that, explicitly or implicitly, responds to the original position. From a temporal perspective, the embodied I has the possibility to *position* and *reposition* itself in accordance with changes in situation and time. In these processes of positioning, counter-positioning, and repositioning, the I fluctuates among different and even opposed positions, both within the self and between self and perceived or imagined others. Like in the society at large, these positions are involved in relationships of relative dominance and social power, with the consequence that one position can dominate or even silence another one.

As part of sign-mediated interchanges, positions can be voiced so that dialogical relationships among positions can develop. The voices behave like interacting characters in a story or movie, involved in processes of question and answer, speaking and listening, agreement and disagreement, conflicts and struggles, and negotiations and integrations. Each of them has a story to tell about their own experiences from their specific perspective. As different voices, these characters exchange information, knowledge, and stories about their respective *Me*'s, creating a complex, narratively structured self (for the processes of positioning, repositioning, and counter-positioning and their roots in the works of James and Bakhtin, see Hermans and Gieser 2012, introductory chapter).

What Is an *I*-Position?

An *I*-position is a relational act in space and time. It is a way of *placing* oneself toward others and oneself. The act of *I*-positioning is taking a stance vis-à-vis somebody else and, at the same time, toward oneself in the metaphorical space of the self. It is a way of addressing the other and oneself

via verbal or nonverbal orientations and communications. I can open myself to another person, and, at the same time, I become more close to myself. Or, I'm bashing a disliked person, but, when being alone, I can become skeptic of myself when remembering my inappropriate behavior. An *I*-position reflects a process of positioning toward the positions of other people, who, in turn, position themselves toward me (e.g., I position myself as strong toward an opponent and as tender-hearted toward a loving other). In the act of *I*-positioning, there is always a "here" and a "there," both in the communication with the other and in the communication with myself. Between this here and there, a field of tension is stretched in which one makes, physically or virtually, movements from the one to the other and back.

Active and passive tense. The concept of positioning is not only used in the active but also in the passive tense. I'm not only taking a position toward another person, but I'm also *positioned* by the other. I can be treated by others as friendly, intrusive, supporting, abusing, or abnormal, and such characterizations can be in agreement with or in contrast to the way I position myself. I have the possibility to develop *counter-positions* that are, in the broadest sense of the term, social responses from positions that are *different* from the way others see or treat me. As participating in society, we are positioned as belonging to a particular social category on the basis of our age, sex, gender, skin color, culture, or nationality. On our turn, we may respond to these categorizations with counter-identities (e.g., not agreeing with binary classifications and seeing myself as transgender or as developing a multiple cultural identity in a situation in which others see me as belonging to my culture of origin only). Such processes of positioning and counter-positioning take place not only on the individual but also on the collective level. *I*-positions then have the quality of *we*-positions in the form of collective identities. On their turn, these identities shape our *I*-positions or trigger counter-positions (e.g., as an immigrant I felt not fully accepted in this country, but finally I have struggled to find my own place). In this way, positioning, being positioned by others, and

counter-positioning are expressions of ongoing dialogical processes that take place in the self as part of social, societal, and historical developments.

Meta-position as Helicopter View

In a democratically organized society, many committees, cross-disciplinary teams, or ombudspersons are at work, with the aim to get an overview of the complexity of a particular problem area as a basis for advices or action programs. Typically, such individuals or groups are concerned about taking a long-term view of the problem at hand. In the self as a society of mind, similar processes are taking place. A “meta-position,” like metacognition, provides an overview of more specific *I*-positions, including their patterns and interrelationships. Such a concept is indispensable for a “distance view” on the diversity and complexity of more specific *I*-positions and the ways in which they are organized. What is the nature of a meta-position and which functions does it have?

A meta-position is a helicopter view that has several specific qualities: (a) it takes an optimal *distance* toward other, more specific, positions, although it may be colored by some specific positions more than others (e.g., an ironic position or a sad one); (b) it allows taking an *overarching* view of a multiplicity of positions so that they are seen simultaneously and in their interconnections; (c) it enables to link positions as part of one’s personal *history* and the collective history of one’s group or culture; (d) in linking past, present, and future, a meta-position permits a *long-term* view of the self; and (e) it leads to an *evaluation* of specific positions and the way they are organized; as a result of this evaluation, some positions are prioritized above others, and the degree of automaticity of positions is reduced. In summary, the development of a meta-position with a broad-scope and long-term perspective contributes, more than most other positions, to the cohesion and continuity of the self as a whole (Hermans and Hermans-Konopka 2010).

A meta-position has three functions for the organization of the self: centralizing, executive,

and signaling. As *centralizing* it brings different and even opposed positions together so that their organization and mutual linkages can be considered, preventing the self from becoming fragmented. The centralizing function is particularly relevant in a globalizing and border-crossing society involved in permanent change and at risk of fragmentation. In its *executive* function, a meta-position provides a basis for decision-making and action programs, taking advantage from the insight in the nature of the specific *I*-positions and their organization. As *signaling*, it functions as a stop signal for automatic and habitual behavior enabling the self to become liberated from rigidly established or maladaptive patterns of positions. Evaluating them from a broad-scope and long-term perspective increases the chances for innovation of significant parts of the self.

We are living in a compressed world with highly advanced communication technologies and, at the same time, confronted with apparent differences in points of view on complex problems, like abortion, euthanasia, minority groups, asylum seekers, the rights of transgender people, climate change, genetic manipulation of food, vaccination of children, and the increasing impact of robots and algorithms in our everyday lives. In their communication about such emotionally laden problems, participants are often constrained by short-term perspectives and are at risk of making impulsive decisions. Therefore, the existence and development of meta-positions with a broad-scope and long-term perspective are indispensable as they enable participants to take a big picture view.

Promoter Positions as Openness to the Future

Leaders in teams, organizations, and countries have the important role to empower the members of these social units and to stimulate their future development. Promoter positions in the self as a society of mind have similar functions. A simple thought experiment may clarify why promoter positions are indispensable for the organization of the self. Suppose that each specific position in

the self would follow its own trajectory, not taking into account the direction of the other positions. This would result in a cacophony of *I*-positions, each having their own voice and realizing their own specific goals irrespective of what the other positions tell and what their purposes would be. The existence and development of promoter positions as “leaders” in the organization of the self prevent the self to arrive in a situation of fragmentation and chaos.

Individuals differ considerably in the nature of their promoter positions. For some it may be “my mission in life,” and for others it may be “I as devoted parent,” “I as an innovative scientist,” “I as an ambitious entrepreneur,” “I as a dedicated volunteer,” “I as deeply religious,” or any other constructive power that, as a motivational source, gives direction and continuity to the self in the long run. What these examples have in common is that they represent driving forces in the self that influence the organization of the position repertoire as a whole and have the potential to generate new, more specific *I*-positions (e.g., as a professor I visit other countries, meet new colleagues, have meetings with students, write a book, develop my creativity, etc.). Promoter positions are not fixed for life. Someone can be committed to a long-term goal but later makes a transition toward a new promoter position. Think of a person who made a career as an ambitious professional but later decides to work as a mentor for younger colleagues. Moreover, one person may be devoted to the development of different promoters, involved in organizing different parts of the self.

Promoters in the self have some characteristics that are analogous to promoting leaders in society: (a) they *organize* and give *direction* to a diversity of more specialized *I*-positions that otherwise would go their own way; they have a “compass function” for the self-system as a whole and take care of setting common purposes; (b) they imply a considerable *openness* toward the future and have the potential to *generate new positions* that are relevant to the further development of the self; (c) they *integrate* a diversity of new and already existing positions in the self in the sense that different positions are brought together to form adaptive and productive combinations; (d) they

have the potential to contribute to the *democratic organization* of the self (Hermans 2018), allowing a diversity of specific *I*-positions to have a voice in the organization of the self; and (e) they function as “guards” of the *continuity* of the self, but, at the same time, they create room for *discontinuity*. Whereas continuity is provided by their ability to link the past, present, and future of the self, discontinuity results from the fact that they generate new positions that require a new balance in the self. As generating possible positions, promoter positions function as innovators of the self.

Although promoter and meta-positions may “cooperate” very well with each other, there are several differences. While a meta-position is a *spatial* concept providing an encompassing view on large parts of the self-system, a promoter position has *temporal* aims as it gives an impetus to one’s future development. While a meta-position works as a vertically ascending and descending “helicopter” allowing a self-reflective distance view on the landscape of the self, a promoter position is analogous to a motor pushing the “machinery” of the self forward at a horizontal plane. Whereas a meta-position stimulates reflection on the content and organization of the specific positions, a promoter position gives this organization a push in order to lift it up to a more advanced level of functioning.

Internal and External Positions: Beyond Self-Society Dualism

In agreement with James’s (1890) notion of self-extension, the self in DST is not limited to the boundaries of the skin. Individuals, groups, and even objects that are significant to the self belong to its extended domain (e.g., my parents, my children, my friends, my sports club, my country, my house). In this way DST avoids any self-other or self-society dualism. The other and, more broadly, society are not considered as the environment of the self but as its basic constituents. When society becomes more complex, the self also becomes more complex. When our social environment becomes more heterogeneous, our self becomes increasingly multiple and diverse. And when

society is involved in rapid change, also the self changes at a higher speed. The self is more than a “container” in which the particulars of the self are buried (Callero 2003).

On the basis of these considerations, DST makes a distinction between internal positions and external (extended) positions. However, including a significant other as external positions or as “other-in-the-self” does not mean that the other is an exact copy of the actual other’s perspective. Already Cooley (1902) was aware of this when proposing his “looking glass self” that does not reflect how others actually see us but rather how we *believe* others see us. Inspired by this idea, Shrauger and Schoeneman (1979) reviewed research on the relationship between self-perceptions and evaluations of the self by others. They concluded that people’s self-perceptions are substantially in agreement with the way they perceive themselves as being viewed by others. In addition, they found that there is no consistent agreement between people’s self-perceptions and how they are actually viewed by others. This finding suggests that an external *I*-position or the other-in-the-self is a subjective construction that is not necessarily in agreement with the actual voices of the others. DST assumes that external *I*-positions are, at least for a great deal, constructions in the service of the needs, aspirations, and imaginations of internal *I*-positions. However, when external *I*-positions would become purely subjective constructions, they would become ultimately illusory or even delusory. Therefore, DST assumes that the self, including its external *I*-positions, requires contact with the actual other in order to correct itself and to maintain a minimally realistic image of the other as part of the extended self.

The inclusion of significant others and groups as external positions of the self has implications for the conception of others as meta- and promoter positions. A meta-position is not a purely internal process. Rather, it is co-constructed by others. Self-reflection from a meta-point of view can take place (and may be different) in a dialogical contact with a friend or in reading an impressive book or listening to deeply inspiring music. Significant others may also function as external

promoter positions in the self. For some it may be an iconic person who reaches the status of a hero or heroine, like a Mandela, a Ghandi, a Malala Yousafsai, a pop artist, or an imaginary figure from a book or film. For others it may be a person living in one’s immediate environment: a parent, a grandparent, a dedicated friend, or a coach. Such people are adopted in the virtual space of the extended domain of the self and become established as valuable sources of energy. [For other central concepts of DST, see Hermans and Hermans-Konopka 2010].

Methods and Fields of Practice

In the course of time, DST has led to the construction of different methods and to applications in different fields of practice. Some of them will be described here.

Self-Confrontation Method. This method (Hermans and Hermans-Jansen 1995) is an idiographic procedure that invites clients, in cooperation with a coach, to formulate narrative meaning units about their past, present, and future in the form of a series of short sentences. Each sentence is then connected with a series of affect terms referring to positive affect (e.g., joy and enjoyment) and negative affect (e.g., anxiety and powerlessness). Moreover, a distinction is made between affect referring to self-assertion (e.g., pride and self-esteem) and affect referring to connection (e.g., love and tenderness). The purpose is to create an organized system of sentences and affect terms that help the client to formulate plans for future actions. This dialogical method is constructed not as a usual psychological test or questionnaire but as a cooperation between psychologist and client with clients as co-investigators of their own situation.

Personal Position Repertoire (PPR) Method. This method (Hermans 2001) assesses a client’s main internal positions and external positions and connects them in a matrix. The entries of the matrix refer to the extent to which a particular internal position comes to the fore in relation to a particular external position. Sum scores are calculated that show which internal positions and

which external positions are most prominent or least prominent in the repertoire as a whole. Via the calculation of correlations between internal positions and between external positions, the method allows to discover connections that are typically below the client's level of awareness. The purpose of this method is to create insight in the content and organization of the position repertoire.

Composition Work. This method (Konopka and van Beers 2014) is inspired not only by DST but also by the philosophy of Japanese gardens. The basic material is a pool of stones that differ in color, form, size, and texture. Clients select those stones that they feel as significant to their own experience. Each stone represents a particular internal or external *I*-position. The stones are then placed in such a way that a composition emerges that reflects the organization of the repertoire. Some positions are more central, other ones more peripheral. Some are dominant, and other ones are neglected or suppressed. Typically, stones are placed in subgroups so that positions that stimulate the clients' development and those that impede it become visible. This method is sensorial and embodied and can be used to study the less conscious layers of the position system.

Fields of Practice. There are four main fields in which DST has been applied. Studies of the dialogical self in *education* are brought together by Meijers and Hermans (2018) with attention to the stimulation of dialogue and dialogical self in the classroom. Applications of DST in *psychotherapy* are collected by Konopka et al. (2019) with contributions from different therapeutic schools and different cultures. Applications in *work and organization* are put together by Hermans (2016) with a focus on forms of assessment and stimulation of a dialogical self. Finally, studies in which DST is applied in the field of *culture* are regularly published in the journal *Culture and Psychology* since 2001 (Valsiner 2019).

In summary, DST conceives of the self as a society of mind that is organized on the basis of dialogical relationships with attention to relationships of dominance and social power. As a bridging theory, it links different theories and conceptual

traditions, has produced a variety of methods, and is applied in different fields of practice. Its dialogical structure provides a basis for the study of the possibilities of the human mind.

Cross-References

- [Dialogism](#)
- [Positioning Theory](#)

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Dialogism

Fiona Maine and Rupert Wegerif
University of Cambridge, Cambridge, UK

Abstract

The first recorded use of the term dialogic refers to novels in the form of a dialogue. The philosopher Mikhail Bakhtin extended this meaning to refer to novels, such as those of Dostoevsky, where multiple characters interact with different points of view which are not reduced to a single reality. For Bakhtin and the Bakhtin circle, dialogism was extended beyond literature to become a general theory of meaning. Meaning is not contained by words and utterances but is found only in the dialogue between them and their context. The meaning of what is said in a dialogue is a response to things that have been said before and an anticipation of things that will be said in response. One implication of this is that wherever there is meaning there is more than one voice in play. Another implication is that there are no final meanings, only an ongoing open dialogue. Dialogic is a contrast to monologic or the view that there is a single correct voice or correct and final view of things. Dialogism has been applied to studies of literature and to the theory of education. Dialogic education has been described as opening a “dialogic space” which is a space of possibilities, widening and expanding that space. In this entry we focus, in particular, on dialogism in education where it is applied as a way to promote a particular kind of possibility thinking.

Keywords

Dialogue · Dialogic · Education · Possibility thinking

Introduction

“Dialogism” is the theory that meaning is “dialogic” where dialogic means “like a dialogue.”

Crucially, according to widely referenced dictionaries such as Merriam-Webster and the Oxford English Dictionary, it suggests the presence of more than one voice. Dialogue comes from a combination of the Greek for “across” – dia and Greek for “speech” – logos, so the implication is that through talking together, meanings are made. But the Greek word “logos” is resonant with many meanings including that of “reason” or “thought” so the terms “dialogue” and “dialogic” are not necessarily limited to language. In cultural studies, for example, the notion of “intercultural dialogue” refers to a much broader concept of sharing and understanding cultural identities, heritages, and practices. The Council of Europe (2008 pp. 10-11) defines intercultural dialogue in its White Paper on Intercultural Dialogue as follows:

Intercultural dialogue is understood as an open and respectful exchange of views between individuals, groups with different ethnic, cultural, religious and linguistic backgrounds and heritage on the basis of mutual understanding and respect [--]. It operates at all levels – within societies, between the societies of Europe and between Europe and the wider world.

Additionally, writers (see, for example, Maine 2015) have described dialogue as an interaction between readers and “texts” such as books, films, or even computer games. Other artistic and creative practices that include a collaboration of more than one voice – jazz, modern dance, and improvisational theatre – can all be viewed as dialogic interactions.

This entry explores the deeper implications of the use of “dialogism” as a term, drawing on its historical traditions and influences, but with a mind to the “possible” and the relationship between dialogism and possibility, situated by a concept of dialogism as opening up a plurality of perspectives, indeed, a potentially infinite or unbounded number of perspectives (Wegerif 2013). Dialogism – the idea of many voices – sits in opposition to monologism, the single truth and authoritative voice claimed by positivism. In other words, in dialogue meanings are made and remade infinitely, as for each “response” multiple new possibilities exist as new meanings are negotiated, either in the practice of small “d” dialogism – talk itself or within the larger big “D” dialogue of (socio-) cultural context

(following Gee's 2015 similar discussion about Discourses). Truths are not singular and non-contestable (monologic) but open to interpretation, challenge, reconceptualization, and transformation. The generation of knowledge from a dialogic perspective assumes collaboration and plurality. It also assumes questioning, and thus, answering. Bakhtin, a philosopher regularly associated with the concept of dialogue in education and literary studies, argues that, "If an answer does not give rise to a new question from itself, it falls out of the dialogue" (Bakhtin 1986 p. 168). For Bakhtin the inter-animation of different perspectives can lead to mutual illumination. Hence for new knowledge and meaning, more than one voice means more than one perspective, an inherent tension between ideas that leads to either resolution or acceptance of plurality. Technically from a dialogic perspective, individual utterances are meaningless until they are considered in their context. Linell (2001) argues that the difference between monologism and dialogism is precisely that, as, "whilst monologism assumes individuals and societies (cultures) to be analytical primes, dialogism takes *actions and interactions*, e.g. the discursive practices, *in their contexts* as basic units" (p. 7). In other words, it is the placement of utterances within the context of what has come before (the question), and then what can possibly come in response (the answer, and then further questions) that builds new knowledge. Engagement in dialogue then transforms us and our reality as we continually reinterpret it and our sense of ourselves. It is the posing of questions and seeking the possibilities of "what might be" that makes dialogism a relevant entry in an Encyclopedia of the Possible.

History of Dialogism

Although the first use of the term "dialogic" was for novels in the form of dialogues between two or more characters, the theory of dialogism has deeper roots. The origins of dialogism can be traced to oral educational practices that came before the focus on print literacy. Buddhist traditions, Confucian education, traditional Jewish education, and the Islamic small group "*Halaqat al-'Ilm*" or circles of knowledge (Makdissi 1990

p. 210) all have dialogic associations. A direct thread through the history of dialogism in the Western tradition ties back to the teachings, and dialogic approach to pedagogy, of Socrates. For Socrates, the growing use of alphabetic writing in education was cause for concern as he felt that it was the face-to-face dialogic interaction where true intelligence could be found (as reported in the *Phaedrus*, a dialogue with Socrates written by Plato). This concern echoes the argument about monologism and dialogism; for Socrates, the fixity of writing meant meanings could not be challenged and developed, only "in the moment" could ideas be expanded.

Buber

Buber, a philosopher of the mid-twentieth century centralizes dialogism through his writing on the difference between Ich-Es (I-It) and Ich-Du (I-Thou) as ontological stances. As essentially monologic, he describes the I-It stance as objective and removed, separating the subject from the object, with "I" rooted in the past, presenting a single, fixed perspective. Alternatively, an I-thou stance is an inherently relational, reciprocal, and dialogic positioning of oneself in relation to another. Dialogue is an experience of wholeness and the relationship between I and Thou is mutual, "[M]y *Thou* affects me, as I affect it" (Buber 1958 p.12).

In earlier work, Buber (1947) used the term "genuine dialogue" to describe "where each of the participants really has in mind the other or others in their present and particular being and turns to them with the intention of establishing a living mutual relation between himself and them" (1947 p. 22). However, Buber warned against the loss of one's own perspective in empathizing with another viewpoint; being able to balance differing perspectives in tension with each other and tolerating the ambiguity of not having concrete conclusions adds to the sense of dialogue as having an ongoing, forward-looking momentum.

Bakhtin

Bakhtin is the modern philosopher and literary theorist most commonly associated with theories about dialogism. He was particularly influenced by both Socrates and Buber in his writing about

the distinction between the “authoritative word” (monologic, fixed, and objective) and the “persuasive word” (dialogic and fluid). For Bakhtin,

The internally persuasive word is half-ours and half-someone else’s. Its creativity and productiveness consist precisely in the fact that such a word awakens new and independent words, that it organizes masses of our words from within, and does not remain in an isolated and static condition. (Bakhtin 1981 p. 343)

Bakhtin is also associated with the idea that dialogue is never-ending or infinite – as response is always possible, and in fact, implied.

Dialogism and Education Theory

If, essentially, dialogism is based on questioning and inquiry, an engagement and relationship with the world, then it is not surprising that notions of dialogism have gained much purchase in educational theories in the last century. Dewey’s argument that all children should be taught to make sense of the world, “with ardent curiosity, fertile imagination and love of experimental inquiry” (Dewey 1933 p. v) is profoundly dialogic, as with each new inquiry comes response and further inquiry. Another influence on modern approaches to dialogic education writing at the same time as Dewey, Mead (1934) suggested that the development of reasoning is dependent on engagement with a “generalized other” and on situating a line of argument into the wider context of being accountable to a community of reasonable people. This situating of argument within the context of multiple perspectives brings to the fore the dialogism enacted by engaging with others.

Dialogism can also be traced in the work of another key educational theorist of the twentieth century, Vygotsky. His work, focused on the transaction of meaning making between More Knowledgeable Others and learners, highlights language as a tool for learning (1986), and hence sits behind many dialogic teaching approaches (Alexander 2020). Vygotsky describes the internalizing of dialogue into inner thought, linking to Bakhtin’s notion of dialogue with culturally embodied voices. More recently the work of Neil Mercer

and colleagues has centralized the importance of “interthinking” as the collaborative touchstone of meaning-making (Mercer and Littleton 2007).

Taking a more political stance, the work of Freire centralizes the role of dialogue in the empowerment of “the oppressed” (2000). He argues, “without dialogue there is no communication and without communication there can be no true education” (2000 p. 92). Dialogue enables us to “name” the world and he claims, “this dialogue cannot be reduced to the act of one person’s ‘depositing’ ideas in another, nor can it become a simple exchange of ideas to be ‘consumed’ by the discussants” (ibid. p. 89). Freire reasons that there are three core aspects to dialogic education: first, the importance of starting with the lived experience of students; second, the idea that dialogic education is about making a real difference in the world through empowerment or giving a voice to those initially without a voice; and finally, the importance of genuine respect and collaboration between educator and student so that meaning can be co-constructed rather than imposed.

Dialogic Teaching Approaches

The name most commonly associated with dialogic teaching in the UK is Robin Alexander (2020). Following a study in five different countries investigating the role of talk in the classroom, he identified five (and more recently added a sixth) principles that he said epitomized a dialogic approach to teaching. Alexander acknowledges that his principles fall into two categories. Firstly, there are those depicting a classroom ethos; these include values around creating a collective endeavor, a supportive environment where students are comfortable in expressing their view, and a reciprocal environment where students listen to each other. The second set of principles relate to the talk itself. Alexander argues that talk should be purposeful with clear learning intent, that it should be cumulative, with ideas working together, and that it should be deliberative, with participants striving to resolve different points of view (2020 p. 131). This final principal potentially sets Alexander’s framework at odds with concept of dialogue promoted by Bakhtin and captured by

Wegerif's (2013) description of "infinitezability." If dialogue celebrates plurality and multiple viewpoints, then the end point is not always to seek agreement, but potentially to tolerate the ambiguity and uncertainty that there are not always resolvable differences of opinion. Other educationalists championing "educational dialogue" also place emphasis on the importance of seeking resolution (see for example Howe et al. 2019). Yet this mode of argumentation, while arguably promoting cognitive growth, does not fully reflect the more Bakhtinian, or Buberian heart of dialogue, even if it does echo the persistence of questioning and reasoning in the teachings of Socrates. In further criticism of dialogic approaches that also have clear learning goals, Matusov (in Matusov and Wegerif 2014) argues that because dialogues are open-ended, a clear purpose and learning outcome is essentially non-dialogic. In response to this assertion, Miyasaki (in Matusov and Miyazaki 2014) makes the point that if we have a dialogic relation with the world around us, then subject specialisms such as Science are part of our growth of understanding about the world.

Other programs in schools allow for a more divergent enterprise. The Philosophy for Children (P4C) program, originating in the USA (Lipman 2003) holds at its core a framework of three "C"s of thinking: Creative Thinking, Caring Thinking, and Critical Thinking. With an additional fourth mode, Collaborative Thinking, added for P4C in the UK, this framework allows for celebration of differences. A recent European-wide project, DIALLS (www.dialls2020.eu) similarly placed values of tolerance, empathy, and inclusion at the core of its work teaching children the skills of dialogue. Influenced by the work of Buber, P4C, and Alexander, the project reconceptualized cultural literacy as an innately dialogic social practice (Maine et al. 2019) focusing not only on the development of skills around talk but also an awareness of one's own identity, heritages, and cultural values in relation to those of others.

Dialogic Space

Apparent in the work of Bakhtin and Buber, the notion of a space between voices or perspectives

is, in itself, important. Wegerif (2013) describes in detail the idea of a dialogic space as the place of tension between perspectives. He also argues that there is "an inclusive space of dialogue within which self and other mutually construct and reconstruct each other" (2008 p. 353). This notion of space between is particularly pertinent to this entry as part of an Encyclopedia of the Possible, as it offers just that. Maine (2015) draws on this idea, and the infinite potential of response highlighted by Bakhtin by describing this space as a "Dialogic Space of Possibility" (2015 p. 19). Ideas that exist in this space are inter-subjective, fluid, and provisional. The tension between perspectives is one of possibility of what could be.

However, the potential of this space depends on the speakers whose ideas are shared. Those engaged in possibility thinking (Craft 2000) would inhabit the space with curiosity and imagination, inquiring about "what if..." or "what might be..." Their ideas would build together, at each point both refining and expanding. This space of possibility can be widened and deepened through embracing many perspectives while exploring different views in depth. The language of dialogue itself can support the opening of these fluid and provisional spaces. Hypotheticality and "possibility markers" (Maine 2015 p. 60) such as "might," "maybe," and "perhaps" enable not just speculation and possibility thinking but also a social cohesion leading to collaboration and inter-subjectivity. Boyd and Kong (2017) noted a further value of the use of possibility language in dialogue, that of "reduced commitment" (Boyd and Kong 2017 p. 27) to an idea should it turn out to be non-acceptable to others. This caveat to putting forward an idea enables a tentative or cautious movement of testing the water to see which ideas float in the dialogic space of possibility.

Dialogic Space and Possibility Thinking

Dialogues have to be lived on the inside, they cannot be defined only in terms of the external surface of things: they cannot be reduced to visible countable things as if they were just so many words or bits of data. Wherever dialogue occurs, it

opens up a space of multiplicity and uncertainty – a dialogic space which consists of divergences and resonances between utterances and voices. The opening of this space is the precondition for the possibility of learning something new.

Before a dialogic space opens, things tend to be thought of as located in space using a default identity way of thinking about reality which assumes that “a thing” is what it is and not another “thing.” The pepper and salt pots on the café table are just pepper and salt pots, for example. But when dialogic space opens up, then material things, bodies, hands, voices, gestures, pixels on the screen, become signs for other things and representative of voices that are not present. Depending on the dialogue, the pepper pot could become Lionel Messi scoring a goal for Barcelona dribbling brilliantly around the salt pot and into a goal marked out by knives and forks, or the two pots could represent the relationship between a proton and a neutron in an atom (deuterium in this case) surrounded by an electron cloud of scattered pepper on the table or they could stand in for almost anything at all.

Each opening of dialogic space is unique, but all dialogic spaces, once opened, share something in common. While in practice any given dialogic space might have a limited range of themes and probable outcomes these cannot be determined in advance because, in principle, any real dialogue opens up an infinite potential for creating new meaning. This is just another way of saying that the context that could be brought into play in any dialogue is not bounded, at least not as far as we know. In practice, a group of children in a dialogue might just bring in references from the TV shows that they saw the night before, but in principle anything could be brought to bear on the problem at hand. But, of course, dialogic spaces are also all different in their physical location. Dialogues always open somewhere that could be given a location in space and time and also in terms of cultural and historical context.

Despite the infinite potential for meaning behind every dialogue, in practice dialogic spaces have limits. It is possible to feel when they open and when they close and the range of references

and resonances, the field of perspectives bound into the dialogue, can be more or less wide and more or less deep. Dialogic education includes the moves of *widening* dialogic spaces by bringing in new and different perspectives, talking to different voices about any given topic on the Internet perhaps, and the move of *deepening* dialogic spaces through a process of “de-construction” that unpicks the key distinctions that frame the dialogue problematizing them or putting them into question in order to expand the range of possible thoughts (Wegerif 2013).

Summary

Dialogism has a deep history going back to the oral education practices of Socrates in ancient Greece and in the tradition of every culture. It claims to be the truth that meaning always involves the play of different voices. It is a contrast to the popular notion of monologism, the illusion that there is always one true voice or one true way of seeing, a correct and final representation of things. Recent accounts of dialogism that have influenced education practice have come from Buber, Freire, and Bakhtin. These all speak in different ways of the importance of opening dialogic spaces in education. Dialogic spaces are spaces in which the divergences and resonances between voices allow new possibilities to emerge. The contemporary practice of dialogic education which involves opening dialogic spaces and then expanding them, widening them with new perspectives, and deepening them by questioning any framing assumptions is a specific way of teaching for an increase in awareness of new possibilities.

Cross-References

- ▶ [George Herbert Mead](#)
- ▶ [Possible in John Dewey](#)
- ▶ [Possibility Thinking](#)
- ▶ [The Possible in the Life and Work of Lev Vygotsky](#)
- ▶ [The Possible in the Life and Work of Mikhail M. Bakhtin](#)

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Dieting

Patrícia Fortes Cavalcanti de Macêdo¹, Mônica Leila Portela de Santana¹, Virgínia Campos Machado¹ and Maria Izabel Siqueira de Andrade²
¹Universidade Federal da Bahia, Salvador, Brazil
²Universidade Federal de Alagoas, Maceió, Brazil

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Dieting · Possible · Health · Weight loss · Disordered eating

Definition

Dieting refers to a common practice with a history of different meanings and associated consequences. Its complexity and controversies have spurred significant scientific attention. When studied empirically, this phenomenon can be investigated using different measurements that generally refer to the history of dieting, a current dieting engagement, or a more specific construct, such as dietary restraint. Its consequences have been widely discussed, with authors highlighting weight loss as a possible end and, on the other hand, adverse consequences, such as weight gain/regain and eating disorder risks. Sociocultural theories, for example, see it as a typical behavior in search of ideal, frequently unattainable health and body. This text mainly focuses on the different senses and meanings of the term and its possible outcomes. To this end, it begins by defining dieting and its history before moving on to summarizing research in the field. Some reflections on how to achieve dieting into the possible are offered toward the end.

The notion of dieting appears in everyday use both by lay discussions and in scientific studies. On the one hand, laypeople mostly understand it as behavior oriented to health or appearance.

Scientific research in this area, on the other hand, brings about concepts ranging from food restriction/control for the prevention/treatment of diseases to dieting as a risk for developing conditions (such as eating disorders), thus overly contributing to understanding the positive and negative implications associated with the term. However, the construct's definitions are still the target of criticism and reflection. In this sense, research on dieting is of interest in many disciplines and has attracted attention from different fields such as medicine, nutrition, psychology, sociology, and anthropology.

Thus, dieting denotes a common type of behavior but can be defined as a multidimensional construct: dieting history, current engagement in dieting, and weight suppression (Lowe 1993). Furthermore, following a diet can have different purposes, which can be gender-mediated, for example. It is a term used to designate conduct taken for clinical treatment or not. As proposed by Lowe and Timko (2004, p. S19): “*depending on what one means by them, dieting can be quite harmful, merely ineffective or actually beneficial.*” Dieting is, therefore, a behavior subject to different meanings. Accordingly, considering that the possible reside in the meeting of perspectives (Glăveanu 2021), it is plausible to suggest that the possible of dieting (as will be argued here) may be subject to mediations related to the different meanings attached to it.

This section will walk us through the history of the definition of dieting. Subsequently, it will continue with a brief review of quantitative and qualitative empirical research on dieting and focus on the sociocultural approach to the term. Finally, a reflection between the concept of dieting and the possible will be proposed.

Definition and History

Dieting is the verb form of the word *diet*. Etymologically, the term *diet* is derived from Greek modifications of the word *diaita*, which described “a way of life” or “regime” (Waife 1955). The concept of *dieting* in popular culture has evolved over time and has been limited to food restriction

aimed at weight control. Such ideas resonate with the general definition listed in the Oxford English Dictionary: “self-restricting to small amounts or special types of foods to lose weight” (Stevenson 2010, p. 8890).

In scientific approaches, the general notion of dieting is also subject to similar meanings, but with distinctions worth highlighting. According to the Dictionary of Medical Terms (Collin 2005, p. 109), when dieting is used as a verbal form, it refers to reducing the amount of food intake or changing the type of food one eats to lose weight or become healthier. While its use as a noun means “the act of trying to reduce weight by decreasing the amount of food intake.” The American Psychological Association argues that dieting can be seen by some health professionals as a solution to obesity and, by others, as a primary pathology associated with eating disorders, like anorexia and bulimia nervosa (APA 2020).

The ambiguity of meanings is also seen in the use of the word *diet*, which can vary depending on the context or region in which it is used. For example, in Nutrition Science, the term *diet* refers explicitly to the prescription of food and drink, in which the quantity and type of food and schedules are regulated for therapeutic purposes (Valentini et al. 2014). Still, depending on the region, the word can also take on different meanings. The French word *diète* is restricted to the diet of patients, while *diet* has a broader approach to the meaning in the English language (Jouanna 2016, p. 211). This ambivalence of meaning opens up what is the possible of human behavior associated with dieting. We can conceptualize it as a behavior related to control, restriction, treatment, and a regular practice associated to a way of life. These differences have been apparent throughout history and suggest that what can be achieved through *diet* or *dieting* may refer to meaning-making dynamics of the possible (Glăveanu 2021).

As mentioned, the current variation of senses and meanings of dieting has been noticed since ancient times. In the classical period, the term *diaita* could refer to the dietary practices of individuals or societies at the time, as attested in the literature and reports by historians (such as

Herodotus), and could also designate the diet of healthy or sick people, judging by the collection of medical works associated with Hippocrates (*Hippocratic Corpus*) (Jouanna 2016, pp. 209–214). Thus, the word *diaita* in the classical Greek context, represented a whole way of life, a complete path to health, and was not restricted to its meaning exclusively related to weight loss, which was intended for corpulent people, whose excess fat was an indicator of ill health and moral conduct related to luxury and depravity (Foxcroft 2011, pp. 20–25). The intertwined relationship between body control and morals could be seen as another angle to explore the possible of dietary practice as an ancient idea.

In the Middle Ages and early Modern era, books on food and meals were still based on classicism's ideas (diet linked to duty and morality). However, such conceptions became more accessible to the general public through the creation of the press. As a result, the Renaissance was marked by the greater reach of the belief that a good diet would lead to better health and a more prosperous society (Foxcroft 2011, pp. 31–34). Nevertheless, in the mid-nineteenth century, dieting takes on the cultural meaning of food restriction for weight loss as we have it today. According to Vester (2010), dieting to lose weight was first a practice aimed at the male audience, which began in Europe, and then spread over to the American continent. It emerged for men as a renegotiation of masculinity and an alert to the dangers of obesity in a culture with a sedentary lifestyle. Later, the logic of self-discipline is adopted by the female gender, with the influence of women's rights activists (see also ► “Feminisms”) who motivated the practice of dieting to encourage women to control their bodies and resist the hegemonic ideals of femininity of the Victorian period. In the 1920s, dieting was consolidated as a widely popular practice spurred on by the meaning of an unpatriotic attitude attributed to waste, indulgence, and overweight (Vester 2010).

In this sense, it is valid to consider the role of normative standards in searching for practices to modify the body, such as dieting. While corpulence represented a trait of desired femininity until

the nineteenth and early twentieth century, in the following decades, figures representing ideas of feminine beauty became increasingly thin (e.g., fashion icon Twiggy in the 1960s), with the growing influence of the advertising industry and the media displaying them (Bonafini and Pozzilli 2010). These changes and contradictions on aesthetic ideals (see also ► “Aesthetics”) help shape the possibility of dieting when we assume that the relationship with food has been consolidated as a way to sculpt the appearance. Another important milestone is the advent of a scientific approach, especially in the early nineteenth century, around the practice of diets, which significantly contributed to foster the meaning of dieting as it is understood today, since scientists and laypeople began to consider the human body as a machine and, later, as a collection of chemical processes (Gilman et al. 2008).

This brief historical report points out that, although under the aegis of different meanings, the diet always has been between an artifact of cultural expression and medical prescription, which evolved under moral values and were later shaped by the attributes of scientific knowledge. Such considerations provide a deeper understanding of *dieting* and how this term can relate to the possible.

Research on Dieting

As mentioned earlier, dieting could mean modifying intake for weight loss or a lifestyle attribute. Since the term is primarily used in the literature to refer to weight loss practice, this will be our focus in this session. An increasing number of studies on dieting have been observed in the last 40 years, which may be related to the phenomenon of obesity and from the understanding that dieting per se can be harmful to health.

Thus, research on dieting can be dichotomized into two fields, one that seeks to understand measures to improve adherence to weight loss recommendations and another that believes that dieting itself is a behavior related to harmful effects on health, and by this must be eliminated (see Putterman and Linden 2004 for a discussion

of this issue). Within these perspectives, the construct can be assessed through scales, questionnaires, or single questions. However, one of the challenges in dieting research is precisely identifying a valid measure of the construct. As previously pointed out by French et al. (1994), generally, single questions are used to assess current engagement in a weight loss diet, while scales identify dieters through behavioral and psychological characteristics. Therefore, when considering the different fields of interest and measures used, research on dieting has many studies, mainly quantitative (observational, psychometric, and experimental), with divergent results.

That said, the belief that energy expenditure would be sufficient to induce weight loss was present in much of the food and nutrition research, based on the premise about the capacity of caloric restriction to induce a negative energy balance. However, the last decades have been marked by new investigations in this field, mainly with the growing obesity. In this vein, Herman and Mack (1975) proposed the Restraint Theory, which supported many of the studies on the negative consequences of dieting on eating behavior and weight. The study of this proposal was conceived by a valid measurement framework, the Restraint Scale (RS) (Herman and Polivy 1980), a one-dimensional ten-item self-reporting instrument designed to identify the restrained eating (or dietary restraint) construct, used interchangeably with dieting. The RS consists of two subscales, one for capturing dieting and the other for weight fluctuation.

Using the RS scale, Polivy and Herman and other researchers showed that chronic dieting correlated with episodes of overeating under stressful conditions, forced preloads or exposure to tempting food stimuli (see Herman and Polivy 2011 for review). However, this scale has been subject to criticism over the years, mainly for inserting overeating within the construct of food restriction, which has led other authors to develop tools to assess food restriction in isolation, such as the Three-Factor Eating Questionnaire (Stunkard and Messick 1985) and the Dutch Eating Behavior Questionnaire (van

Strien et al. 1986). Overall, it is inferred that RS identifies chronic, unsuccessful dieters and TFEQ and DEBQ the successful ones. The use of the restrained eating concept, measured by the above scales, is also questioned to identify the dieting construct. Lowe (1993) reformulated the Restraint Theory proposal through the Three-Factor Model of Dieting and state that dieting can take on three dimensions, assessed by the Dieting and Weight History Questionnaire (DWHQ) (Witt et al. 2013). These theories have different definitions, understandings, and meanings of what dieting is and its implications (see Chen et al. 2021 for review).

Furthermore, population-based studies, using mainly single questions, with samples of adolescent and adult individuals of both genders, showed outcomes such as weight regain and risk of eating disorders. For example, Neumark-Sztainer et al. (2007, 2012) showed that dieting is prevalent and a predictor of weight gain and disordered eating behaviors (such as binge eating, skipping meals, and using diet pills). Other authors have reproduced these findings in different countries and by experimental research, and many are based on the Restraint Theory (Herman and Polivy 1980, 1984). However, dieting's beneficial effects were also observed by other authors in observational and experimental studies. In a review, Lowe and Timko (2004) pointed out some of these results and described studies in which dieting reduced overeating or bulimic symptoms in clinical and non-clinical samples.

Despite the vast amount of observational and intervention studies, qualitative research on experiences and meanings associated with dieting is less robust. Wertheim et al. (1997) reported one of the first investigations of this type, using semi-structured interviews with 30 adolescents from public schools in Victoria, Australia, to assess descriptions and reasons for weight loss attempts. They found that one of the reasons for dieting often involved feeling fat and highlighted media and fashion pressure on teenage girls to be thin. In more recent studies, feeling fat (or improving appearance) also appears as a motivator for dieting in women with eating disorders (Cooper

et al. 2007) or overweight/obesity (Leske et al. 2012), and “being healthier,” which, per findings by de Souza and Ciclitira (2005), is a prominent reason in men.

Regarding the meaning of the term, dieting appears as something “that everyone does” (according to English teenagers, Sharpe et al. 2013) and that can be done in different ways (according to Malaysian women, Ismail et al. 2018) such as “skipping meals” or “removing rice from daily meals.” These accounts are essential to examine the different meanings of the gender-mediated construct, for example, and reflect its relationship with the possible, as we will see below.

Dieting and the Possible

Dieting is connected mainly to changes in weight and eating behavior. While weight loss is explained by the induction of negative energy balance promoted by the diet’s caloric restriction, the unwanted consequences are justified by psychological or biological “diet-defensive” reactions, such as dieting leading to overeating (Herman and Polivy 1984) or reduced metabolic rate/lean mass loss facilitating post-dieting weight regain (Prentice et al. 1991). One of the limitations of overlapping only one viewpoint is the risk of generalizing that dieting is miraculously the means to achieve ideal weight/body loss or is fatally harmful, regardless of who is doing it or how and what it is referring to. Finally, how does one define in which terms the construct fits in?

Lowe (1993, 2015) believe that obtaining this answer requires understanding the type of dieting behavior being referred to. The Three-Factor Diet Model proposed three types of dieting behavior: history of dieting, current dieting to lose weight, and weight suppression (or the difference between individuals’ current weight and their highest previous weight). Thus, rather than claiming that dieting almost invariably leads to negative consequences, they assume that the construct’s facets may be related to its different effects on eating and

weight (harmful or not). They conclude as follows (Chen et al. 2021, p. 28):

Stated differently, asking whether dieting is “good or bad” is analogous to asking if taking methadone is good or bad. If someone goes on a weight loss diet because of preexisting weight gain or loss of control eating, then dieting may improve these conditions, just as taking methadone in place of heroin will reduce risk for harmful outcomes. With 40 years of hindsight, most dieting now appears to be a consequence of our obesogenic environment. Making widespread changes to that environment may be single best way to curb the need for dieting.

Therefore, how does one interpret its senses, meanings, and implications for society? A sociocultural perspective of dieting sees it as a typical behavior (mainly, but not exclusively, of women) motivated by the search for cultural health and body ideals promoted by art, media, and science. Thus, dieting appears as a mean to control bodies, whether from a feminist perspective or a historical analysis of science (medicine), and while at the same time a consequence, it perpetuates the rejection of fat in a contemporary westernized world. Sociocultural theories also postulate the role of Western media in promoting unattainable ideals and leading individuals to internalize them and adopt them as their own, which places measures such as dieting (most often with extreme behaviors) as everyday conduct in an attempt to achieve them. Yet, a system of values around dieting and body can also be understood through the concept of diet culture. This term refers to the social and cultural atmosphere that normalizes weight control (placing dieting as a cultural practice) and fat-phobic bigotry (Tovar 2018, p. 12). According to Davidson (2020), three major aspects compose diet culture, namely, thinness as a way of gaining social power, placing moral value on specific foods and body types, and rigidly associating thin bodies with health. Thus, dieting appears as a means to achieve these values. Putting all into perspective, we can suppose the diet culture transforms a polysemic instrument (i.e., dieting construct) into a normative control device, which adds a symbolic value associated with different consequences, such as the

incessant and fallible search for an unreachable body or attribute.

We can reflect that the possible of dieting addressed in this work can fit in perspectives of results and intersubjective experience. Thus, to outline it, we will start from the understanding of Glăveanu (2021), for whom the possible can be understood as residing in the meeting of perspectives. From a socio-historical conception, we can infer that dieting took on a character of what Vygotsky called “fossilized behavior,” that is, its meaning as we currently understand it faded over time through a long stage of historical development. This process results in a crystallized understanding of the term dieting, in the contemporary world, as a (control) behavior to reach an almost always unattainable ideal. Lowe and collaborators contribute to the reflection on the term’s possible – or the rupture of fossilized behavior – by pointing out that dieting can be mediated by the different perspectives it takes. In this sense, if we consider that dieting takes on other dimensions, the concept can recover different meanings, such as care. However, for this possibility to be forthcoming, it is necessary to reflect on something at the root of the perpetuation of the restricted meaning of the term: the diet culture. Thus, to expand the possibilities linked to dieting and give new meaning to it, it is essential to overcome the tension established in a society that interprets dieting as an instrument to achieve a perfect idealized body for obtaining intangible happiness.

Conclusion

Dieting is a common experience that plays a vital role in subjects’ lives and displays different senses, meanings, and results depending on the mediations when exploring the possible, including the individual’s viewpoint. While it can be theorized as behavior in response to physiological and biological demands, dieting is also an intersubjective phenomenon. From a sociocultural reading, we perceive it as behavior aimed at obtaining a historically built ideal under the

influence of different culturally expressed forces, such as the media and science. In this sense, as discussed here, dieting can be characterized as an instrument open to different meanings based on established perspectives and the subject’s relationship with the world. Finally, for such a redefinition, we believe that it is essential to be sensitive to new perspectives and open to dialogue, understanding the limits within which this concept is included, such as those that delimit dieting to the expectation of unrealistic results, in order to traverse it through a reflective process, thus expanding the possible links to the term.

Cross-References

- [Aesthetics](#)
- [Feminisms](#)
- [Risk](#)
- [The Possible in the Life and Work of Lev Vygotsky](#)
- [Values](#)

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Disability

Dan Goodley¹, Magda Szarota² and
Agnieszka Wołowicz³

¹Human, University of Sheffield, Sheffield, UK

²Lancaster University, Lancaster, UK

³University of Warsaw, Warsaw, Poland

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Disability oftentimes tends to be associated with misfortune, personal tragedy, passivity, and dependency. However, a closer look at the actual history of the disabled people's movement and disability studies reveals stories of imagining disability and therefore societies differently. The lineage of envisioning the world through the prism of the possible (rather than impossible) is not complete without including the theorization and politicization of disability – that in the past few decades has gained intellectual momentum. In the following paragraphs, we map the most critical turning points in those academic and activist developments.

Disability Studies as an Academic Counterpart of the Disabled People's Movement

In the 1970s, the British group of disabled people, the Union of the Physically Impaired Against Segregation (UPIAS), contributed hugely to changing the dominant paradigm in thinking about disability, a dominant view that framed it as a medical and individual problem. In a manifesto from 1976, they announced that it was not individual bodies but society that was responsible for the production of disability. In “The Fundamental Principles of Disability,” they defined disability as a phenomenon caused by social conditions and one that can and should be changed (UPIAS 1976, p. 4). Introducing the distinction between

disability and impairment, they postulated that the reason for the unequal status of people with disabilities is not related to their innate limitations, but physical and social barriers that impede their participation in various areas of life. A social approach to the study of disability becomes a tool for understanding and contesting discrimination, isolation, and oppression of people whose bodies and minds deviate from strictly defined sociocultural norms as well as those associated with health rather than illness. In this approach, disability is becoming not a medical category, but a political one.

In the early 1990s, disability studies founded on the tension between medical and social views of disability started to become part of academic institutions. Disability studies are located between scientific reflection and social and political activism, where they play a critical role (pointing to oppression, seeking legislative changes and changes in social attitudes, and emancipation, linked to the activism of disabled people and their allies). Disability studies investigate the injustice and oppression of people with disabilities – nowadays and in a historical perspective – to show the paths for the future but also bring disability issues out of the closed circle of medicine, rehabilitation, and social assistance.

Activists' and Academics' Encounters: Social Model of Disability

The UPIAS approach toward disability was termed in 1983 by Mike Oliver, first professor of disability studies, as “the social model of disability.” This notion over became central for disability studies and disabled people's movement (Shakespeare 2006). However, Oliver was not introducing a new idea, per se, but, as he himself stressed, took this division “quite simply and explicitly from the distinction originally made between impairment and disability by the Union of the Physically Impaired Against Segregation” (Oliver 1990). Oliver treated the social model as a “practical tool” (2004, p. 30) which he defined as follows:

[n]othing more or less fundamental than a switch away from focusing on the physical limitations of particular individuals to the way the physical and social environments impose limitations upon certain groups or categories of people (Oliver 1983, p. 23) and thus excludes them from mainstream of social activities. (Oliver 1996, p. 22)

Oliver's definition of the social model of disability, with its stark division between impairment and disability, enhanced the materialist perspective in regard to identifying and examining disabling conditions that disabled people face in societies – and therefore has been referred to as the “strong social model” approach, while prominent disability studies scholars who adhered to it were labeled as “strong social modelists” (Shakespeare and Watson 2001). One of these social modelist academics, Colin Barnes, explained that the social model is to function in disability research and interrelated disability advocacy and politics as “a tool with which to gain insight into the disabling tendencies of modern society, in order to generate policies and practices to facilitate their eradication” (2003, pp. 6–7). Indeed, the social model of disability triggered a wealth of knowledge-making and meaning-making that addressed disability (Goodley et al. 2012; Roulstone et al. 2012) and in effect revealed and challenged material, environmental, and cultural barriers as well as prejudices, stereotypes, and oppression, permeating capitalist societies (Meekosha and Shuttleworth 2009). Contesting hegemonic disability models and interrelated narratives and/or representations of disabled people with the means of the social model informed disability advocacy and politics – some of which was successful in tackling structural barriers (Morris 1991; Roulstone et al. 2012) and brought a stronger sense of empowerment and dignity for disabled individuals (Morris 1991). Specifically, the social model of disability has served as one of the foundational ideas of the Convention on the Rights of Persons with Disabilities (UN 2006), which definitely frames disability as a human rights issue. For disabled people around the globe, the Convention is associated with “new possibilities” in regard to making

their lives “better.” Moreover, the Convention imposes on states the obligation to collect data necessary to implement the provisions of the Convention in practice. Thus, statistics and data collection clearly play a service role toward the rights and freedoms that CRPD postulates. They are to provide information necessary to monitor the situation of people with disabilities and to implement policies and activities that support equality and equal opportunities for people with disabilities in various areas of life.

Feminist Disability Studies

Feminist disability studies were developed at the intersection of disability studies and the feminist and disabled people's movement (Garland-Thomson 2004). American, British, and Canadian disabled women activists, writers, artists, and researchers who in the 1980s started on an unprecedented scale of publishing works problematizing the situation of disabled women in their societies and cultures are considered the forerunners of this academic orientation (Szarota 2019). As they stressed they were disappointed that otherwise flourishing women and disabled people's movements have overlooked the discrimination of disabled women and on top of that were also found guilty of discriminatory practices against representatives of this group that in turn limited their activist and/or research engagements. Rebecca S. Grothouse expressed that sense of urgency as follows: “[d]isabled women must demand our rights, because waiting for someone else to do it hasn't worked out yet” (Grothouse 1985, p. 128). Despite their disillusionment with the mainstream feminist movement, they adopted its core premise of the “personal is political” to theorize lived experiences of disabled women. On the basis of this approach, the literary and scholarly publications from the 1980s and 1990s established a thematic canon for feminist disability studies which includes issues such as stereotypes and prejudices, education, employment, representations of disabled women in culture, reproductive rights and sexuality, parenthood and motherhood, care, (de)

institutionalization, violence, impairment versus disability, illness as disability, disabled embodiment, and aging (Bê 2012; Szarota 2019). While feminist disability studies' aims are to tackle the discrimination of disabled women and contribute to their economic, sociopolitical, and cultural emancipation, its focus is also broad. As one of its key scholars, Rosemarie Garland-Thomson explains:

[feminist disability studies] is more than research and scholarship about women with disabilities, just as feminist scholarship extends beyond women to critically analyze the entire gender system. Like feminist studies itself, feminist disability studies is academic cultural work with a sharp political edge and a vigorous critical punch. Feminist disability studies wants to unsettle tired stereotypes about people with disabilities. It seeks to challenge our dominant assumptions about living with a disability. It situates the disability experience in the context of rights and exclusions. It aspires to retrieve dismissed voices and misrepresented experiences. It helps us understand the intricate relation between bodies and selves. It illuminates the social processes of identity formation. It aims to denaturalize disability. In short, feminist disability studies reimagines disability. (2004, p. 1557)

Therefore – while feminist disability scholars draw upon the social approaches to disability (including the social model) – they have expanded it theoretically and empirically and in doing so shed new light on the nature of disablement as well as provided new ways to tackle it.

Disability Studies: Epistemology and Methodology (Case Studies: Intersectionality and Participatory and Emancipatory Research)

The transformation of the disability model from the medical/individual to the sociopolitical and human rights, the development of civic aspirations, and the work of activists with disabilities led to paradigmatic changes in disability studies (Goodley 1998; McVilly and Dalton 2006) and also highlighted the discrepancy between social discourses and research rhetoric, forcing researchers to think about ways to study disability.

The topic of disability has been raised for years by researchers, and at the same time, disabled people often have had the feeling that regardless of the field, they are talked about and written off as patients or dehumanized research objects. The reason for this is still the dominant analysis of various aspects of the lives of people with disabilities from the perspective of other people: carers, therapists, teachers, or service providers. This leads to a situation in which the issues undertaken by researchers are not always important for the interested parties themselves – people with disabilities – especially in a specific sociocultural or situational context, and the conducted research does not necessarily bring measurable benefits to the persons concerned.

The answer to the criticism of the monopolization of knowledge by the army of “experts” has been the participatory paradigm (Heron and Reason 2001). It assumes that, in order for scientific research to provide important foundations for optimal organization of living space for people with disabilities, it should take into account their voices and involve the interested parties themselves. Participatory research is a two-way exploration. The first one, based on the traditional role of the research subject, engages interested parties themselves and uses methods that create the possibility of activating people with disabilities and reaching the knowledge important for them. The second one is that people with disabilities take on nonstandard roles and appear as advisors and consultants as well as co-investigators with varying degrees and scope of involvement and decision-making and executive participation in the research process (e.g., Bigby and Frawley 2010; Garcia-Iriate et al. 2009; Traustadóttir 2001; Wołowicz 2018). The key importance of a participatory approach in scientific research is expressed in obtaining knowledge that reflects the subjective perception of reality and its meanings and assessments from the perspective of the needs and possibilities arising from the disability itself.

A unique and innovative example of research in the participatory paradigm is the inclusive research which involves people with

intellectual disabilities¹ in the roles of researchers. In this proposed research model, people with intellectual disabilities are not treated as static and passive from the point of view of the dynamics of the research process, sources of knowledge, where the subject faces ready-made research assumptions, having generally completely no influence on the course of the research process. In the inclusive research model, people with intellectual disabilities are involved in developing issues and research concepts, conducting research, analyzing the material obtained in order to search for the meanings arising from it, co-creating theories, and disseminating the results (Goodley and Moore 2000; O'Brien et al. 2014). The position of the respondents defined in this way is a consequence of the recognition of their competence as subjects of their own activities and experts in their own affairs. The strategy of including representatives of this group as co-investigators is still underway, as well as an attempt to describe ways to maximize their participation and control at every stage of the study. How to disclose their competences in the research process and how to protect their autonomy and agency are also discussed (Abbot and McConkey 2006; Walmsley 2001). Inclusive research contributes to overcoming stereotypes assuming the lack of self-awareness of people with intellectual disabilities, lack of orientation in reality, and the inability to assess it. This research is important in strengthening the understanding of intellectual disability as a social construct, showing the ambiguity of the meaning of reality from the perspective of people with disabilities. Inclusive studies also show the diversity of the population of people with disabilities.

Within disability studies, disability is not a universal, unambiguous, and invariable phenomenon but a concept that, as emphasized by the Convention on the Rights of Persons with Disabilities, is constantly evolving. The medical model of disability contributes to a consolidation

of thinking about people with disabilities as “medical cases,” assuming that all the difficulties they experience are only the consequences of illness or damage to the body (Barnes and Mercer 2004). Therefore, disability in this model is not only a differentiating feature but also a negative one. In order to overcome research limitations in social sciences and analyses of sociocultural diversity, the concept of intersectionality has been proposed, which is the result of attempts to theorize difference and reflect on how to value and incorporate diversity into the social context not as negative or problematic phenomenon (Hill Collins 2009).

Threads related to the ways in which identity and belonging to various groups are intertwined and the impact of this belonging on life opportunities were first raised by American feminist activists in the 1970s. At that time, postulates for building a social order in which women's possibilities and aspirations would not be perceived in one dimension, i.e., only through the prism of gender, were developed. Nevertheless, at the end of the 1970s, some feminist activists began to pay attention to the fact that feminism postulations do not always take into account the perspectives and experiences of women perceived as socially “other” – with ethnic identities other than white, from lower classes, with lower education or income. Thus, they showed that many characteristics, identities, and belonging decide about the human situation. Following this lead, Kimberlé Crenshaw, an American researcher, introduced the concept of intersectionality to her scientific work in the late 1980s (Crenshaw 1989). At present, intersectionality is understood as an approach analyzing the ways in which social and cultural categories intersect, overlap, and strengthen one another. Adopting the perspective which says that activities for people with disabilities should take into account knowledge of the specifics of their functioning also due to gender, age, sexual orientation, migrant status, and other premises allowed to see this group as internally diverse and more effectively study the parts which do not fit into the privileged group within the minority (Knudsen 2005; Wołowicz-Ruszkowska 2015).

¹ Intellectual disability is a developmental disorder characterized by a decrease in the general level of intellectual functioning and deficits in adaptive behavior.

Affirmation and Capacity Perspectives

Affirmation is at the heart of the politics of disability. The very acts of disability activists are, at their very essence, the affirmation of disability as a productive entity and the celebration of the lives of disabled people. This double affirmation (1) posits disability as an aspect of the human condition to think differently about the world and (2) positions disabled people as political activists with much to contribute to the current political commons. Let us take each of these affirmative moments in turn. To suggest that disability is a phenomenon, an experience, a lifeworld, or an ontology to rethink our relationships in the world is a provocation offered by disability studies. An example of reframing is given by Tim Booth and Wendy Booth (1994, 1998) and their pioneering work on the lives of parents with intellectual disabilities. Their disability research worked closely with the lives of these parents to capture many of the challenges they faced in parenting their children. These challenges were often associated with the barriers they faced, as new parents, from professionals such as social workers who already had in mind the assumption that parents with the label of intellectual disabilities were psychologically incapable of looking after their children. This assumption should not be understood as a prejudice endemic within the social work profession because social workers are inherently negative human beings. Instead, Booth and Booth found that a deficit perspective was ripe within social work because of the commonly held view (a view that abounds even today across our society) that having an intellectual disability equates with incompetence to parent. Social workers, then, translated this deficit thinking into their practice and were more likely to find parental incompetence precisely because they were expected to find it in the parenting of adults with intellectual disabilities. In contrast, they found, were one to adopt a capacity perspective to social work practice – to assume that parents can look after their children with the right kinds of support network around them – then parents (and their children) were more likely to benefit from this kind of professional input. Booth and

Booth (1998) developed the concept of distributed parental competence. This idea assumes that strong kinship and community support networks provide the necessary conditions to support and empower parents in their daily lives with their children. Indeed, the very presence of intellectual disability and the community's knowledge of this phenomenon, in a number of their research case studies, led to a variety of rich, supportive, and empowering support networks that supported the families. Intellectual disability has the potential, then, to provoke an affirmative community response. Disability elicits capacity perspectives. This leads us to the second point of affirmation: the contributions of disabled activists. In my 1998 book, I found that people with intellectual disabilities were involved in a rich politics of resilience (Goodley 1998). Since the 1960s, people so-labeled have been engaged in the self-advocacy movement, a global political movement that fights for the political recognition of people with intellectual disabilities. Drawing on slogans such as "Label Jars Not People" and organizing under the title of "People First," people with intellectual disabilities have demanded that we not only recognize their ambitions and aspirations but also question the potentially damaging consequences of sticky labels such as intellectual disabilities. This is not to deny the presence of intellectual disability, though it is to question the dehumanizing impact of its application. This is but one example of the affirmative qualities associated with work of disability activists.

Humanism and Disability Theory

The preceding section's discussion of disability's affirmative potential leads us neatly into a discussion of humanism. Clearly, the self-advocacy of people with intellectual disabilities is evidence of a fight to be recognized as full human beings. Such a fight is understandable. When others assume that your competence is compromised by your disability, then it makes complete sense to want to contest such dehumanizing assumptions. Disability politics has, therefore, had a long engagement with humanism. This philosophical

position reflects, according to Rosi Braidotti (2013, p. 29), a legacy of the enlightenment, forever associated with cherished notions of autonomy, responsibility, self-determination, solidarity, community-bonding, social justice, and principles of equality. To reposition oneself as autonomous and responsible – as a parent with intellectual disabilities – is to appropriate humanism in order to reconfigure oneself as a human being that it is fit to parent. To re-establish oneself as *People First* is to demand recognition of one's humanist essence as an individual; an individuality often lost when one is associated with the label of intellectual disabilities. Moreover, the United Nations Convention on the Rights of Persons with Disabilities is a supranational discourse that plays out across the world from Dubai to Delhi. Humanism continues to undergird much of what we understand in terms of human rights and the pull toward processes of rehumanization: especially in the case of those human beings who have been historically cast as less than human. To draw on the language of humanism is to seek reintegration into the human category, for after all:

[n]ot all of us can say, with any degree of certainty, that we have always been human, or that we are only that. Some of us are not even considered fully human now, let alone at previous moments of Western social, political and scientific history. (Braidotti 2013, p. 1)

Disability studies and disability politics contribute toward the project of what Paul Gilroy (2018) calls a “re-enchantment with humanism.” And this project hails in a critical encounter with how the human category has been constituted, in ways that include or exclude certain kinds of human being.

Posthuman Disability Studies

For some disability scholars, the desire for disability to be recognized by the humanist register is one that needs to be resisted. The reasoning behind this resistance can be found in this question: why would anyone want to be recognized by a way of thinking that has historically erased oneself? Humanism is, for some critics, inherently

exclusionary because it already has in mind a preferred model of humanity (as an autonomous, independent, and self-sufficient soul) that many humans fail to match up to. Why, then, would one want to embrace humanism if one is going to be rejected by this way of thinking? This denunciation of humanism has led scholars to engage with posthumanism (e.g., Feely 2016; Flynn 2017; Goodley et al. 2014, 2018; van Trigt et al. 2016). The work of Rosi Braidotti has been central to the development of this perspective, and it seems only right to offer a partial definition of post-human thinking to her:

I define the critical posthuman subject within an eco-philosophy of multiple becomings, as a relational subject constituted in and by multiplicity, . . . a subject that works across differences and is also internally differentiated, but still grounded and embodied. Posthuman subjectivity expresses an embodied and embedded and hence partial form of accountability, based on a strong sense of collectivity, relationality and hence community building . . . an affirmative bond that locates the subject in the flow of relations with multiple others. (Braidotti 2013, pp. 49–50)

In contrast to the individually bounded autonomy associated with the humanist subject, the posthuman subject emphasizes distribution, relationality, and collectivity. The posthuman condition is one in which we all find ourselves relationally distributed across virtual and real connections between humans and nonhumans. A child living in Manchester, England, for example, is a global child, touched by the Internet, governed by supranational and national educational policies, plugged into a host of virtual environments, located in a local community increasingly influenced by the pan-national. And, as Goodley et al. (2014) have argued, disability is in many the quintessential posthuman subject. It is possible, therefore, to position disability politics and the lives of disabled people in a posthuman milieu precisely because these politics and ways of living are extended and distributed. Hence, the parenting and self-advocacy of people with intellectual disabilities can be reread as evidence of productive posthuman interdependencies, relational connections, and affirmative community networks. By moving into

the posthuman register, we bypass the narrow humanist conceptions of humanity as autonomy and, instead, consider the ways in which the politics of disability feed positively into the posthuman condition in ways that enrich the lives of disabled people and those around them. Moreover, disability is positioned not as the absence of humanity but a phenomenon from which to think together about the posthuman contemporary moment.

Cross-References

► Empowerment

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Discourse

Mirko Demasi

Leeds Beckett University, Leeds, UK

Abstract

“Discourse” is a word that one comes across frequently. It finds a home in empirical research and media alike, but it is a term that is not always clearly defined. This entry will offer one way that one can understand discourse, that is through the lens of discursive psychology. The overarching argument is in favor of an expansive understanding of the possibilities of studying discourse: If it can be uttered, written, or expressed in another format then it can be empirically researched. Through an appropriate analytic lens, it is much more empirically and materially tangible than is often appreciated. The first part covers what a discursive psychological understanding of discourse entails, and a short explanation of what discursive psychology is. The second part is an overview of various contexts where discursive psychology has contributed to the study of discourse. In the final section I briefly discuss some possible areas – so far relatively absent in discursive research – of study using a discursive approach, particularly in the context of studying the discursive construction of deductive logic.

Keywords

Discourse · Discursive psychology · Possible · Science · Deduction · Logic

Introduction

This entry is going to be divided into two parts. In the first part, I provide a brief overview of the body of discursive psychological work on discourse. However, the reader should not infer from this a primacy of discursive psychology or that it be the only way to study discourse. In line with the encyclopedia, my aim is to show *possible*

ways to study discourse rather than provide a comprehensive overview. The reader should note that this is going to be a necessarily short and possibly an unjust overview of a vast body of work. My choice of focusing on discursive psychology is a simple one. As a social psychologist who uses discursive psychology this is the area of discursive studies that I am most familiar with. However, discourse is studied from a wide range of academic subjects and there are a multitude of different ways to analyze it depending on where one comes from academically. For example, one can study discourse using the following approaches: conversation analysis, critical discourse analysis, critical discursive psychology, discourse analysis, discursive psychology, multimodal/embodied conversation analysis, rhetorical political analysis, rhetorical psychology, and (some variants of) thematic analysis to name a few. The way one studies discourse can be heavily influenced by one's academic background.

In the second part I will look at some of the possibilities that the topic of discourse, and the body of discursive research, can contribute to scholarly work. Although I will list a number of possibilities, I have chosen a particular theme to go into more detail that, to my knowledge, has not been explicitly looked at so far: the discursive construction of scientific argument.

Overview of Discursive Psychological Work

Before moving on to discussing the various bodies of research focusing on discourse, it is beneficial to provide a rough overview of what I mean to be discourse as understood in discursive psychology (henceforth DP). Potter and Wetherell (1987) introduced discourse as an entity that does not have a neat definition, it varies depending on discipline and method of analysis. They follow suit from Gilbert and Mulkay (1984) and conceptualize discourse as something that includes “all forms of spoken interaction, formal and informal, and written texts of all kinds” (Potter and Wetherell 1987, p. 7). Not all forms of analyzing discourse adhere to this view. For example,

conversation analysis (CA) leans itself more toward what it refers to as “naturally occurring interaction” – data that passes the dead social scientist test¹ – whereas a more critical, Foucauldian, approach to discourse analysis will take discourse to include and be included in a much wider range of practices. For this entry I will work with the definition offered by Potter and Wetherell (1987), though with an added understanding, which should become apparent later on due to its wide applicability, namely that “discourse” should be understood as all forms of speech, text, and image. My understanding of discourse is that it entails *all* forms of conveying action and meaning, of which language-based communication (i.e., speech and text) are some of the more sophisticated and analyzable aspects, but by no means the only ones.

DP draws its origins from three works in particular: Billig (1987), Edwards and Mercer (1987), and Potter and Wetherell (1987), culminating in the book *Discursive Psychology* (Edwards and Potter 1992) which, to this day, remains one of the primary texts for becoming familiar with DP. These scholars began a body of work that took a radical departure from the existing standard of psychological research of their times, especially regarding the role of speech and language. In so doing they offered a critique of mainstream psychology, and in particular its cognitive variants. The nub of this critique is that one cannot use language to infer thought (Edwards and Potter 1992) in the way much of existing psychological literature has done. Instead, they offered an empirical alternative by looking to *discourse as a site where psychologically relevant action unfolds*. In this sense, discourse becomes a prime phenomenon worth studying on its own terms, rather than treating it as a mere conduit, or a proxy, for other phenomena. This has resulted in a systematic re-specification of psychological notions (Huma

¹“Would the data be the same, or be there at all, if the researcher got run over on the way to work?” (Potter 2002, p. 541). In other words, for the data to pass this test its existence needs to be independent of the researcher's actions.

et al. 2020). One can use DP to fundamentally challenge the interpretation of findings in well-established psychological research which, in turn, questions our very understanding of basic psychological concepts. For example, Gibson’s (2013, 2019) work on looking at the interactions in the well-known obedience experiments run by Stanley Milgram (1963, 1974) has given us a new way to understand the concept of obedience. In his close analysis of the recordings of Milgram’s experiments, Gibson makes a number of important observations. First, he shows that the prods were not delivered in the strict order in which they were reported. This does not detract from the value of Milgram’s work, but highlights that there may be a discrepancy between how standard scientific reporting is done and how the actual experimental interactions unfold. This distinction is very important. Second, because the actual interactions are more intricate than reported suggests that something more complex is going on. Looking at the interactions, Gibson (2013) argues that we should reconsider how we understand obedience. In practical terms, obedience is much more indirect, argumentative, rhetorical, flexible, and varied than conventional psychological research would suggest. One might understand obedience in a more contextual and practical manner, rather than treat it as a behavioral compliance to a direct order. Gibson argues that

any analysis that purports to present a complete account of dis/obedience but which fails to conceptualise the active rhetorical nature of language use is inherently limited, and moreover risks breaking down when specific instances of dis/obedience are scrutinised. (2013, p. 307)

Our appreciation of the practical complexity of social psychological phenomena, in this instance obedience, is due to looking at discursive practices.

A classic and enduring critique is to question the use of questionnaires as a way to empirically study attitudes (Potter and Wetherell 1987). A DP approach would argue that attitudes could be understood as occasioned and varying depending on the context (Billig 1989) and made sense of as evaluations that draw their function and meaning

from being embedded within discourse, (Potter and Wetherell 1988). That is, one cannot readily understand attitudes as abstract entities that are somehow stable and empirically tangible via standardized quantitative methods that treat language as evidence of cognition. According to DP, attitudes are rendered *qua* attitudes *in and through* discourse. The main analytic points of focus of DP can be found in the discursive action model (DAM) (Table 1).

If the reader wishes to read more about this, the works of Edwards and Potter (1992), Potter (2012), and Wiggins (2017) can provide a thorough and accessible overviews. There tends to be a general trend of four types of DP (Potter 2012; Wetherell and Edley 2009) including first, the study of interpretive repertoires; second, a focus on naturalistic interactions; third, a sequential analysis of discourse heavily influenced by CA; and fourth, a critical DP, with a closer alignment with critical discourse analysis (CDA).

DP covers a wealth of various topics and modes of analysis. Examples include mealtimes and how food preferences are embodied in

Discourse, Table 1 DAM (Edwards and Potter 1992, p. 154; 1993)

<i>Action</i>
1. The focus is on action, not cognition
2. Remembering and attribution become, operationally, reportings (and accounts, descriptions, formulations, versions, and so on) and the inferences that they make available
3. Reportings are situated in activity sequences such as those involving invitation refusals, blamings, and defenses
<i>Fact and interest</i>
4. There is a dilemma of stake and interest, which is often managed by doing attribution via reports
5. Reports are therefore constructed/displayed <i>as</i> factual by way of a variety of discursive techniques
6. Reports are rhetorically organized to undermine alternatives
<i>Accountability</i>
7. Reports attend to the agency and accountability in the reported events
8. Reports attend to the accountability of the current speaker’s action, including those done in reporting
9. The latter two concerns are often related, such as 7 is deployed for 8, and 8 is deployed for 7

discourse (Wiggins 2014), advice giving and its delicate delivery (Hepburn and Potter 2011), health interaction (Burke and McGeechan 2020), political debates (Demasi 2019; Demasi and Tileagă 2019), political speeches (Edwards and Potter 1992), online discussion forums (Børlie and Goodman 2021; Meredith and Richardson 2019), repressive silence (Murray 2021), social media (Burke 2018; Burke et al. 2020; Snejder et al. 2021), broadcast programs (Carr 2021), and police interrogations (Stokoe and Edwards 2007, 2008).

One can use these topics to understand matters of emotion (Edwards 1997, 1999), identity (Antaki and Widdicombe 1998), prejudice (Augoustinos and Every 2007; Burke and Demasi 2021; Billig 1988; Tileagă 2016), attitudes (see above), to explore how the inner psychological life is displayed in an embodied manner (Wiggins and Osvaldsson Cromdal 2021), and other psychologically relevant material.² This is part of DP's move to re-specify psychological concepts to demonstrate how we make sense of psychological phenomena as a practical matter. Alternatively, if one is concerned about how to analyze discourse in various contexts, then one can tap into the diverse body of work that looks at discourse in different contexts: mundane interaction, interviews, multiparty interactions, heated arguments, online chat forums, multimodal analysis, media more broadly, and so forth. Or one can use DP to explore various dimension of discourse as it unfolds³: extreme case formulations (Pomerantz 1986), overlapping talk (Schegloff 2000), displaying and managing "knowledge" (Heritage 2013), and so forth.

Within the more specific domain of political communication, DP has had a long history since its earliest days (see examples in Edwards and Potter 1992) to the present day (Demasi et al. 2021). For example, rather than treat "facts,"

such as statistics, as mere reflections of an underlying reality, their rhetorical nature is worth exploring (Billig 2021; Demasi 2019) to appreciate the discursive *action* related to facts: "constructions of facts are not neutral reflections of an objective reality; they are rhetorical means to rhetorical ends" (Demasi 2019, p. 18). A diverse range of different topics have been explored within the domain of political communication: extreme prejudice (Billig 2001; Burke and Demasi 2021), accusations of prejudice (Gibson 2021; Goodman and Burke 2010), denials of prejudice (Augoustinos and Every 2007; Byford 2006), conspiracy theories (Byford 2011), public accountability (Tileagă 2010a, b), political cartoons (Lennon and Kilby 2021), parliamentary discourse (Figgou and Anagnostopoulou 2021), blogs (Pettersson and Sakki 2021), lay understandings of politics (Andreouli 2021), and social and national identities (Abell et al. 2007; Condor 2000). My recent work (Demasi et al. 2021) is a summary of the various types of political communication that one can study using DP.⁴ What should be clear is that even within this particular analytic tradition of discursive psychology, the body of discursive work is a very broad church.

Discourse and Science

This leads us to the following question, and the crux of this encyclopedic entry, what is possible within the realm of discursive studies? Two particular possibilities arise: a methodological discussion spurred on by the existence of research that looks at discourse *as* discourse, and this possibility has been in the process of being consummated since the early days of DP, and how, because of this debate, one can explore the discursive construction of scientific arguments.

Discursive psychology is an example, par excellence, of a *counterinductive* (Feyerabend 2010) approach. Not only has DP developed its own interpretive framework and its own

²Or, as Edwards and Potter (2005, p. 241) say, the "psychological thesaurus."

³This dimension of DP is closely aligned with CA, and the disciplinary boundary here is more blurred. Hence the citations here are from conversation analytic work, but bear relevance for DP.

⁴For an overview of various traditions of studying political discourse, see Condor et al. (2013).

terminology, distinct from standard practices of psychological research, but, additionally, is also a form of critique of the fallibility of what we hold to be sound scientific, quantitative, and positivist practice. Due to this position, practitioners of DP argue in favor of a systematic empirical alternative. This approach highlights the place of discourse at the center of our social and cultural lives; it mediates everything we do, from exchange of knowledge (whether in talk-in-interaction, science, conspiracy, politics, etc.) to the most banal forms of social action (inviting a friend for lunch, greetings, asking for a cup of tea, etc.). Indeed, discourse is what unites all diverse forms of human life – it provides a link from the highly abstract to everyday life. This means that it is important to study discourse in its various concrete aspects and not to treat it as a mere proxy for more abstract notions, whether these are concepts, cognitions, or something else.

It is *possible* for each subject to have a discursive component. Indeed, we can argue that since it is possible to study discourse in all aspects and contexts of its mediating role as we communicate as individuals, as groups, as societies, its place in and across academic disciplines is becoming more significant and influential. Each discipline has room for an empirical study of its relevant discourse(s) and its relationship to the discipline.

A Way Forward

I would like to suggest further possible avenues of research and consideration. Ludwig Wittgenstein's (2010) later work suggested we look at the communal functions of language, and how we might understand it. This philosophical turn has had major implications and is one of the earlier influences of what is called discursive psychology today, as well as paving the way for many other disciplines too. We might consider whether we can turn this discursive attention in another direction. Wittgenstein's philosophy of language eventually turned into a new empirical study of discourse; why not turn this new empirical study of discourse back to philosophy of science? Namely, the rhetorical

construction of philosophical arguments, especially in the case of deductive and inductive arguments, foundational as they are for argument and enquiry. I will very briefly discuss some possibilities.

First part of the strength of a deductive argument resides on the premises being true. One can deduce effectively *if* the premises are true. Yet this "if" can have a rhetorical dimension of being a tiny adjunct that might not receive attention, and so quickly glossed over. However, in practice this "if" can speak volumes. Combine this with the notion that an appropriate deduction contains the conclusion in the initial premise. Now, we can begin to analyze deduction as a form of discourse and note that philosophical argumentation is required not only to "find the truth" but also to rhetorically argue for a proposition. By recognizing its rhetorical nature, by *understanding deduction as a form of discourse*, we can see how deductions, and philosophical thought (even a strictly positivist one), do not exist in a vacuum. If facts are ideological, as Feyerabend (2010) argues, then we must view deduction, too, as an ideological proposition based on a particular way of determining premises. This has serious implications to how we view the place of deductive arguments, especially when dealing with abstract notions. Because abstract notions are studied often via proxies, such as treating speech as evidence of thought (Billig 2009), this means that one has to rhetorically, in and through discourse, construct this link and *construct it as true*. Because questions and answers are inevitably paired, it stands to reason that when one is deducting with abstract notions one is always bound to find an answer. And one that conforms to the scientific pressures of the time, unless one is prepared to think (argue through discourse) non-scientifically in order to advance science (Feyerabend 2010). At first glance the pairing of a question and answer in deduction may strike one as a banal observation, however it raises a serious point. This means that it becomes difficult to disentangle between one's answer from the mode of reasoning (deduction) and the available empirical data. The focus on the discursive construction of deductive reasoning may alleviate the

many discussions around the replication crisis that psychology finds itself in today.

Second, Edwards (2012) suggest that a significant benefit of DP includes the notion of a reduced interpretive gap. He defines it as “the distance between the object under scrutiny and, via method, data processing, and inferences, what you eventually want to say about it” (p. 428). This stands in contrast to a method of enquiry, in his case cognitive psychology, where one deals with discourse as a proxy rather than an object of study in and of itself. His concept has a wider utility. One can use that to look at the rhetorical construction of scientific and philosophical arguments. For example, how might one downplay an arguably large gap in order to advance a particular line of argument? To return to the example of cognitive psychology, this gap is large and its treatment of language-as-a-window-to-cognition is an axiomatic premise. This discursive construction invites not only a close discursive analysis (as has been carried out in science by Gilbert and Mulkay 1984) of scientific and philosophical discourse, but, in addition, an investigation of academic and scientific practice.

Third, following on from this, Billig (2009, 2013, 2019) has been critical of the way empirical psychology is written and used in academia. In particular, he criticizes how technical language can mask the matter of human agency in discourse. He argues in favor of a more “populated” social psychology that rightfully portrays people as doing the doing – agency is recognized by talking about who-does-what over how a particular psychological or discursive process might unfold. The suggestion is for a more holistic approach that explores the place of discourse, especially when arguing for particular ways of knowing the world, both in the philosophy of science and in the construction of empirical arguments. For example, we could look at the discursive construction of empirical arguments to explore our conceptual understanding of ontological and epistemological questions. It would benefit the academic community if there was a systematic study of the discursive construction of forms of scientific ideology. What do we treat as an explanation? Are some explanations treated

as more foundational than others? Why? How does one discursively construct a case for this? How does one treat something as not an explanation? In particular it is worth asking what are the arguments, if any (for silence can be an argument), of materialist approaches in science being treated as more “real” than non-materialist approaches? We could look at the discursive and rhetorical constructions of such arguments to explore this further. How are physics justified to be the most common philosophical starting point of ontological questions? Crucially, what are the philosophical and methodological implications of a model that assumes a mechanistic cause-and-effect relationship – especially in terms of variables – that might easily have a role to play in arguments regarding free will? This we do by examining the discursive and rhetorical constructions of philosophical and scientific principles.

These suggestions potentially highlight that philosophy of science arguments are constructed *discursively*, as is every form of interaction. Just as one can construct discourse of any kind, this means that one can construct any deductive or inductive argument and so become a creative enterprise in order to be able to “think outside the box.” This becomes possible especially when we are prepared to tolerate nonconventional ways of making scientific arguments.⁵ Not as an excuse for poor quality work or poor thinking, but by appreciating the discursive nature of reasoning as something that can expand our ability to view scientific and philosophical questions. For example, should one choose to use a different discursive construction for the human mind than the cognitive one, couching it in different discursive terms, this could give a very different understanding of how we view, conceptualize, study, and understand how we think and understand ourselves and others. I refer to cognition here as a computational metaphor for thought. The argument here is that we cannot directly observe thought or cognition, saved within a discursively

⁵Non-standard as understood by Feyerabend (2010) and Kuhn (2012), whose critiques of “science,” in their cases, more specifically referred to the orthodox way of doing science.

constructed theoretical framework that will axiomatically treat specific phenomena as observations, or possibly evidence, of cognition. The various cognitive frameworks and their theoretical underpinnings are just one group of discursive means of making sense of psychological phenomena.

One line of alternatives can already be found in understanding thought to be a dialogical and argumentative process (Billig 1996; Linell 2009; Marková 2000). This means, briefly, that thought is conceptualized in a more discursive manner; one can observe thought when people speak of complex issues (“on the one hand... on the other hand”) and acknowledging the possibility that one might also debate with oneself (Billig 1996). What other ways can we use to understand the mind? This diversity, and its discursive potential, is to be celebrated with a plethora of possibilities to go forward to explore the many facets of scientific, academic, and philosophical thought and practice, as realized in and through discourse.

Cross-References

- Possible in Philosophy
- Possible in Psychology
- Rhetoric
- The Possible in the Life and Work of Ludwig Wittgenstein
- “What If” Thinking

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Dishonesty

Andrea Pittarello¹ and Daphna Motro²

¹Psychology Department, Virginia Tech, Blacksburg, VA, USA

²Frank G. Zarb School of Business, Hofstra University, Hempstead, NY, USA

Abstract

Dishonesty can be broadly defined as any behavior that violates what most people deem acceptable or that breaks the rules. While initially confined to clear violations, such as cheating and stealing, research now also considers lack of reciprocity, failure to restrict energy consumption, and exploiting loopholes as dishonest behaviors. Given the breadth of these behaviors, scholars from psychology and neighboring fields have developed novel theoretical and empirical approaches to understand what drives good people to do bad things, and what can be done about it. This entry is not limited to a review of this literature. Rather, it discusses some of the processes in which dishonesty can make “*the impossible possible*,” such as bending the rules while feeling honest, unconsciously lying to ourselves, seeing reality in self-serving ways, and even promoting creativity. It will conclude with the discussion of some current research on how dishonesty can be curbed in real-life settings.

Keywords

Dishonesty · Justifications · Unethical behavior · Morality · Decision making

Introduction

When thinking about dishonesty, some may imagine students cheating on a test or job candidates lying on their resumes. Some can recall a catastrophic business scandal or the untrustworthy behavior of a salesperson. Or others can think about the daily lies people tell others (DePaulo and Kashy 1998), some of them “white lies,”

while others out of spite (Gneezy 2005). Given the many ways people think about what is dishonest it is difficult to clearly define dishonesty. Accordingly, researchers use dishonesty as an umbrella term that covers unethical behaviors such as cheating, stealing, fraud, deception, and other questionable acts. Over time, each of these behaviors has developed its own empirical and theoretical line of research. However, the purpose of this entry is not to list and review the key findings of these fields, nor to describe how they differ from each other. Rather, it aims to provide a definition of dishonesty based on prior literature and to illustrate how dishonesty can make the “impossible possible.” This could be by changing how people interpret their actions, beliefs, the way they process information, and even by promoting desirable behaviors.

Dishonesty is defined as a decision that is either “*illegal or morally unacceptable to the larger community*” (Jones 1991, p. 367). But *how* do people decide whether to behave dishonestly or not? *How* do they determine what is morally acceptable? A first attempt to model dishonest behavior stems from the work of Gary Becker (1968) and his normative approach to crime. The idea is that the decision to break the rules depends on the trade-off between the costs (the probability of getting caught and the punishment) and the benefits (e.g., more money, a higher status) of doing wrong. Simply put, an agent would likely engage in dishonest behavior if and only if the benefits outweigh the costs. Note that this “economic approach” is a *method* of analysis: It neither makes any assumptions about agents’ motivations nor assumes that self-interest prevails (Becker 1993).

Mazar et al. (2008) conducted many experiments to put Becker’s model to the test. Participants in their studies were asked to solve as many simple math problems as possible within a few minutes. For each problem they reported solving, they would receive a fixed amount of money (e.g., \$0.50). This payoff, coupled with the fact that the time was not enough to solve all the problems, provided participants an incentive to dishonestly overreport their performance. Participants in one group had their performance

checked by an experimenter – a baseline condition where cheating was not possible. Participants in another group were asked to self-check their performance, pay themselves accordingly, and shred the sheet with the math problems. Hence, not only was cheating possible, but this treatment removed the probability of getting caught and any punishment. In a variation of this experiment, the payoff per problem was four times higher. If people do behave in line with an economic approach, one would expect everyone to cheat possibly to the full extent (e.g., reporting solving all the problems in the set) and proportionally to the payoff. However, the results told a different story. Participants did cheat, but only “a little bit,” just enough to profit from dishonesty without spoiling their idea of being an honest person (Sanitioso et al. 1990).

This result deviates from what a purely selfish agent would do and shows that people care about the psychological cost of lying and prefer to think about themselves as honest (Abeler et al. 2019). This also highlights a fascinating conundrum: How is it possible that people hold two opposing desires at the same time: Reaping the benefits of dishonesty but wanting to feel honest? How do we make the impossible possible?

Justifications: How to Do Wrong but Feel Honest

When people hold two contrasting beliefs (here, being honest but cheating at the same time), they experience a sense of dissonance (Barkan et al. 2015), a tension between doing right or wrong. When it comes to dishonesty, this tension can be resolved by either cheating, or by taking the high road. From a naïve lens, doing both is impossible. However, one process that can make this possible is justifications.

Justifications allow people to interpret facts in a self-serving way. This idea is rooted in the notion of motivated reasoning – people’s ability to arrive at any desirable conclusions as long as they come up with reasonable justifications for these conclusions (Kunda 1990). But how do justifications shape dishonesty? In one experiment,

Shalvi et al. (2011) asked participants to privately roll a die and report the outcome to determine their pay (higher rolls meant higher pay). Some participants rolled only once. Others rolled three times – supposedly to ensure that the die was fair – but only the first roll counted for pay. Reports were higher in the latter condition, where participants frequently reported the highest of the three rolls. Seeing higher (and tempting) rolls made it legitimate for people to excuse their behavior (“I could have rolled a six!”). In the absence of extra rolls, inventing facts does feel quite as legitimate.

Research also showed that people find it easier to justify their behavior if their dishonesty benefits others. Using the same die roll task, Cadsby et al. (2016) found that participants tend to dishonestly overreport higher numbers to benefit ingroup more than outgroup members. Overall, the tendency to tell prosocial lies increases as the number of beneficiaries increases (Gino et al. 2013) and people do not feel particularly guilty about it. The idea that people can be “partners in crime” is also illustrated by Weisel and Shalvi (2015), who found that – even in the absence of communication – people can corrupt others fairly easily, revealing an unexpected dark side of cooperation.

Not only does guilt decrease when people cheat for others vs. themselves, but so does physiological arousal. In a series of experiments, Hochman et al. (2021) found that people who dishonestly benefitted others (vs. themselves only) exhibited lower arousal (measured by a polygraph). In sum, using others to justify dishonesty changes both people’s self-report feelings of guilt as well as their physiological states, the latter of which is outside volitional control.

Although people lie for (and with) others, it is important to note that the magnitude of dishonesty still reflects a general aversion to lying (Abeler et al. 2019). As a case in point, Erat and Gneezy (2012) found that only ~65% of individuals tell a *Pareto* lie (one that increases the welfare of both parties). Thus, using others as a justification for dishonesty reduces, but not eliminates, the threat of spoiling one’s self concept. In sum, this research shows that justifications allow people to make it possible to do wrong but feel moral.

Self-Deception: “It’s not a Lie (If You Believe It)”

There are many situations in daily life where people disregard an often undesirable truth in favor of a more desirable false belief. For instance, even when reality is grim, people can still convince themselves of being better at many things than they actually are (see Alicke et al. 1995). The question is: How it is possible for people to hold a false belief about themselves despite having evidence to the contrary? The answer is self-deception, a notion that ties back to motivated reasoning and people’s desire to see themselves in a positive light. In one experiment, Epley and Whitchurch (2008) invited students to the lab to have their pictures taken. Next, they morphed these pictures to create some more and some less attractive versions of them. Two to four weeks later, the same participants returned to the lab and were asked to pick their original picture among the different versions. It turned out that participants systematically chose a more attractive version of themselves. This did not happen when they had to recognize pictures of strangers, meaning that this “enhancement bias” is self – but not other – serving. But how does self-deception play out when it involves dishonesty?

Chance et al. (2011) had students perform a general knowledge test. Half of them were given the opportunity to cheat by looking at an answer sheet. Half of them were not. Next, all participants predicted their performance on a similar test in the future. Unsurprisingly, participants cheated on the first test when given the answer sheet. But how did cheating affect subsequent predictions? If there is no self-deception, predictions should not differ between groups. However, if there is self-deception, those who cheated should expect a better performance. This was indeed the case. These participants interpreted their dishonesty as a sign of intelligence – instead of disregarding it – and used it to convince themselves of being good test takers. Interestingly, offering monetary rewards for accurate predictions on a second test did not adjust participants’ forecast, suggesting that people might not know that they are lying to

themselves. Ironically, cheaters ended up earning less money.

Similarly, Gneezy et al. (2020) found that participants playing the role of financial advisors were more likely to make recommendations to clients if these recommendations offered advisors a monetary incentive, but only if they knew about the incentives *before* evaluating the investments. These participants were also confident that their recommendation was the one preferred by their clients. In sum, this research shows that self-deception allows people to lie to themselves making it possible to favor a self-serving belief even in the presence of a truthful, yet less desirable one.

Cognitive Biases: The Role of Information Processing

People's perception of reality is malleable, and depends on desires, goals, and motivations – factors that can make people focus on some aspects of what is in front of them while neglecting others (Balcetis and Dunning 2006). At times, these “oversights” are harmless (e.g., visual illusions). However, when it comes to ethical issues, their consequences are much more serious. For instance, after failing to recall the dangerous and deadly Pinto model, Ford managers asked themselves how they could not *see* or *process* the gravity of the problem (Gioia 1992). How was it possible? How could the managers not see all the human loss of bringing the Pinto to market? This section discusses how dishonesty can make it possible to affect low-level psychological factors such as perception and memory. Specifically, it reviews some research showing that temptation and instrumental motives can lead people to *see* and *remember* reality in a self-serving way.

Recently, researchers have begun to trace eye movements to understand the cognitive processes underlying dishonesty. Pittarello et al. (2015) created a computer task that asked participants to report the outcome of a target die roll (among others) indicated by a cue. Reporting higher rolls corresponded to a higher payoff. Sometimes, the die second closest to the cue was higher than the target roll, which made it tempting to report and

allowed participants to make a “self-serving mistake.” Not surprisingly, participants frequently reported the higher rolls, even though it was the dishonest thing to do. Eye tracking analysis showed that these mistakes resulted from more attention allocated to the “tempting rolls” at the expense of correct (but less tempting) ones, a phenomenon labeled “ethical blind spots.”

It remains unclear whether the dishonesty stemming from ethical blind spots is conscious or not. On some occasions, people might deliberately turn a blind eye to their wrongdoings possibly to avoid feeling bad about it. Conversely, on other occasions they might not be aware that their behavior lacks integrity (Jacobsen et al. 2018). For instance, well-intentioned doctors may not be aware of a conflict of interest that leads them to make decisions that favor companies compensating them; they believe they are doing the best for their patients (Feldman and Halali 2019).

Not only does dishonesty affect perception of ethical situations, but also people's memory of them. For instance, Galeotti et al. (2020) found that people engage in “motivated forgetting”: They tend to misremember their past dishonesty if doing so allows them to cheat again in the future. Finally, Pittarello et al. (2022) found that people even tend to remember objects as physically closer to tempting stimuli than to non-tempting stimuli. In sum, this research shows that dishonesty makes it possible for people to literally alter their view of reality via biased information processing.

The “Evil Genius” Effect?

The research reviewed so far highlights the negative repercussions that dishonesty has on individuals. The focus on such a dark side made some scholars wonder: Is it possible that dishonesty promotes any desirable behavior? Clearly, people's morals are flexible and the line between right or wrong is blurred. Flexibility, however, also characterizes another desirable behavior: Creativity. Coming up with novel ideas requires people to find solutions to problems, think “without boundaries” and “outside the box”

(Thompson 2008, p. 226). Building on these commonalities, Gino and Willemuth (2014) tested whether being dishonest can enhance creativity. In one experiment, they asked participants to complete the math problem-cheating task reviewed above. This allowed measuring dishonesty. Finally, the same participants completed a creativity task – finding associations among groups of unrelated words. Unsurprisingly, participants cheated on the math task. Surprisingly though, cheaters outperformed non-cheaters in the word-association task. The same effect emerged when cheating did not yield a monetary incentive but allowed people to avoid a threat to their self-esteem. These results were explained by participants feeling unconstrained by the rules.

It is important to note that the opposite causal path, namely creativity leading to dishonesty, can also be true. Case in point, Gino and Ariely (2012) found that dispositional creativity, but not intelligence, predicted dishonesty. Interestingly, the same pattern emerged when a creative mindset was temporarily primed. However, recent work warns that the relationship between creativity and dishonesty is not so straightforward. For instance, Mai et al. (2015) found that a creative personality leads to cheating only if this personality is activated. Such activation occurs in situations that “provide cues for the expression of trait-relevant behaviors” (p. 77). A recent meta-analysis by Ścigala et al. (2021) found mixed evidence for the link between creativity and unethical behavior. Using multiple objective and subjective measures of creativity, the authors found a negative correlation between *objective* creativity and cheating, and a positive one between *subjective* creativity and cheating. Neither objective nor subjective creativity influenced dishonesty when dishonesty involved deceiving another person. Finally, Keem et al. (2018) suggested that creativity can lead to both honest and dishonest behaviors, depending on the extent to which people value their moral identity. In sum, while only a handful of studies showed that dishonesty can make it possible for people to become more creative, whether creativity makes it possible for people to become dishonest requires further investigation.

The Difficulty of Reducing Dishonesty: What Can Be Done About It?

Alongside theoretical considerations, understanding what drives dishonesty also helps craft interventions that can promote ethical climates. This section will discuss some of these attempts both in the field and in the lab. The underlying question is: Is it possible to make people less dishonest? Or perhaps making the “impossible possible” a less attractive option?

One way to achieve this goal is to leverage on people’s desire to be (and appear) honest. While there are many ways to do so, an intriguing possibility is using subtle cues that remind people about morality. A classic example is displaying a picture of eyes on the wall (see Bateson et al. 2006) with the purpose of making people feel observed (both by themselves and by others, Ayal et al. 2015). Ayal et al. (2019) applied this idea to public transportation fare evasion. They found that displaying eye-cues posters at different train stations was not enough to promote honesty unless these posters were accompanied by messages highlighting how many people obeyed and validated their tickets. The finding is in line with a recent work showing that pictures of eyes alone seem to have small or insignificant effects on honesty (Cai et al. 2015; Northover et al. 2017).

Another less subtle intervention relies on social norms by informing people about what others did in ethical situations. This strategy is often called “moral suasion.” In a series of experiments, Dimant et al. (2020) had participants take part in a cheating task. Before deciding whether to tell the truth or to lie to earn undeserved money, participants were told that the majority of relevant peers *were* honest or thought that one *should* be honest. Surprisingly, neither of these norm messages made people more honest than when no messages were given. This was because they did not change how inappropriate people perceived lying to be. This work also does not tell us whether it is easier to make people more honest or less dishonest. Dimant (2019) had participants complete a series of economic decisions after observing others who behaved prosocially, or antisocially. Overall, participants adjusted their behavior in the

direction of those whom they had observed, indicating social contagion. However, this contagion was asymmetric: Perhaps dishearteningly, the impact of “bad apples” was much stronger than that of “good apples.” Put differently, it is much easier to make people behaving dishonestly than honestly.

Less subtle interventions include moral reminders, frequently operationalized as explicit requests for compliance. Bott et al. (2020) collected data from +15,000 taxpayers in Norway and varied the content of a letter soliciting compliance. One letter contained general information about how to report taxes. One “moral” letter contained information about fairness (e.g., it is important to pay), and another highlighted the societal benefits of paying taxes. A final letter was written in a way that communicated how the authorities had knowledge of the taxpayers’ assets in a bid to elicit fear of detection. Overall, both moral letters and that instilling fear of detection corresponded to greater compliance, but in different ways: Moral letters affected the amount of income reported among those who would have reported less income in the absence of a reminder, whereas detection letters affected the proportion of people who reported any income.

Looking at more “ordinary transgressions,” Pruckner and Sausgruber (2013) studied honesty in the context of paying for newspapers in the street. They varied the reminder attached to a cashbox used to collect payments from customers. A control reminder just reported the price of the newspaper. A legal reminder reported the cost and that stealing a copy was illegal. A moral reminder reported the cost and thanked customers for being honest. The key result was that the moral reminder outperformed the legal, even when such a reminder was subsequently removed.

In sum, this research shows that making people more honest (or less dishonest) is challenging but possible. Because dishonesty spans different unethical behaviors, a “one size fits all intervention” is unlikely to promote large scale changes, especially in the field where many factors cannot be controlled. Furthermore, because these interventions are often deployed at the group level, they fail to consider the heterogeneity of the

population, which might explain why some interventions can even backfire (Pittarello et al. 2021). Finally, it is important to understand people’s acceptance of reminders (or nudges), whether they deem them as ethical, and whether they are seen as paternalistic tools to impose behaviors (see Hagman et al. 2019).

Conclusion

This entry provides a general definition of dishonesty and discusses how we can make “the impossible possible.” Specifically, it shows that justifications allow people to do wrong while feeling honest, how people can lie to themselves (without necessarily being aware of it) and how physiological changes allow people to interpret reality in a self-serving way. Finally, it touches on the controversial topic of whether doing wrong can even promote desirable behaviors such as creativity. It ends by asking perhaps the most important question from an applied perspective: Is it possible to make people more honest (or, less dishonest)? The answer, at least to date, is that it can but that more research is needed to encourage the ethical behavior we all desire across a variety of different situations and heterogeneous population.

Cross-References

- [Counterfactual Thinking](#)
- [Creativity](#)
- [Possible in Psychology](#)

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Divergent Thinking

Mark A. Runco

Southern Oregon University, Ashland, OR, USA

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Synopsis

This chapter answers the question of “what is possible” by drawing from theories of creativity. It suggests that creative thinking will provide a wider range of answers to that key question than will logic and convergent thinking. It also points to one particular model of creative thinking, namely, that of divergent thinking, as especially useful. It provides a summary of the research on divergent thinking. This includes the very recent modifications to the model, including those defining cognitive hyperspace. This chapter concludes by putting divergent thinking in the larger context. Divergent thinking is useful but is not synonymous with creative thinking. There are other approaches to creative thinking, though, as noted herein, the divergent thinking approach is

especially useful when considering the question, “what is possible?”

Introduction

The question “what is possible” is enormously important. That is in part due to its breadth: it could be asked within any culture, any era, or any discipline. It no doubt comes to mind any time there is a concern for progress, advance, growth, or evolution. It might be asked by organizations faced with a problem (e.g., how to maintain a competitive advantage) and in need of solutions, or asked by an individual pondering the human condition. How can such a broad question be answered?

The question “what is possible” might be answered via logical inference. Simplifying, such logic might start with the way things are and then logically extrapolate to the way things could be. Current options might be extended or tweaked so they have some new component. The problem with this logical approach is that what is possible may not depend much if any on the way things are, in which case the current situation – and even the current logic – may not predict all possible futures or options. This is precisely what Jerome Bruner pointed to creativity when he thought about the future. He was concerned about the speed of social, cultural, and technological change and argued that because of the speed of change educators must focus on preparing students for a future which is, as he put it, unforeseeable. He described creativity as a way of going “beyond the information given,” which is consistent with the idea above that creativity can provide possibilities that are not apparent from traditional logic. Think also about *paradigm shifts* (Kuhn 1963), which are defined as dramatic breaks in the flow of progress. No wonder Kuhn (1964) pointed to creativity in his theory of paradigm shifts. Indeed, creative processes offer possibilities that may not follow from logical inference.

This chapter explores creative processes and suggests that creative thinking must be used when attempting to answer the question “what is

possible?” It describes a model of creative thinking that is especially fitting when answering the “what is possible?” question.

That model is based in part on the theory of divergent thinking (DT), which is in turn part of a theory called the Structure of the Intellect (Guilford 1968). The Structure of Intellect was proposed decades ago and was antithetical to IQ testing. The IQ approach assumes one general intelligence (“g”), while the Structure of Intellect contains 180 different kinds of cognition. The separation of the 180 “cells” was not supported by data, but one part of that theory held up. This was the distinction between divergent thinking (DT) and convergent thinking. The former describes ideation that moves in different directions, some of which are original and novel, while the latter describes solutions which are conventional and consistent with norms and common knowledge. Divergent thinking is by no means synonymous with creative thinking, but it does provide a reliable method for assessing the potential for creative thinking, and there is evidence that DT is predictive of many creative activities and achievements (summarized by Runco and Acar 2019).

Extensive research has uncovered the value (e.g., predictive validity) of DT but also the limitations. This research is quite useful for the present discussion. The next section of this chapter defines DT, then summarizes evidence tying it to creative potential, and then notes the limitations of the model and methods. Throughout the narrative the usefulness of DT as a way of answering “what is possible” is made explicit.

Divergent Thinking

Divergent thinking is the modern label for what was originally called divergent production and, as noted above, was part of Guilford’s (1968) Structure of Intellect model. Also noted above was that much of that model has been dismissed. This was primarily due to the fact that Guilford used subjective analytic methods for distinguishing the 180 cells. What has endured and held up was the idea of divergence, which has proven quite useful

for understanding and estimating creative potential. Note that tests of DT provide estimates, but this is true of all tests. Tests are samples, and each has some measurement error. If there was no measurement error, test scores would be perfect indicators of creative capacity, but given that there is a modicum of measurement error, they are best viewed as estimates of the target skill or capacity. Along the same lines, it is best to view DT as related to *creative potential*. Just because a person does well on a test does not mean that he or she will actually do well in the natural environment. A person displaying DT does, however, possess what may be the most important part of creative potential, namely, the capacity to produce original ideas.

DT is involved when an individual is faced with an open-ended task. Tests of DT are often simple, and open-ended, and may contain questions like “list alternative uses for a shoe – the more ideas you write down, the better,” or “list uses for a brick.” Other DT tasks are visual rather than verbal, and some ask the person to generate problems rather than solutions. There are also realistic tests which present open-ended situations that a person might actually encounter in the natural environment. Here we have the first aspect of DT that makes it so relevant to the question of “what is possible.” That question is certainly open-ended! And DT reflects a capacity to deal with open-ended tasks.

DT often leads to original ideas, which is why DT tests are so often used when there is a need to estimate creative potential – originality being a prerequisite for creativity (Runco and Jaeger 2012). Originality is apparent when a person uses his or her DT and thereby produces novel or at least rare ideas. Operationally this means that the original person produces ideas that no one else thinks of, or at least very few others. Originality can be scored quite objectively; it is really a matter of statistical infrequency. In fact, new methods for scoring DT tests rely on computers (Dumas and Runco 2018; Hass 2015) and are quite objective. Computers can also be used to score DT for the other two most useful aspects of DT, namely, *flexibility* and *fluency*. The former is calculated from the number of conceptual categories tapped

by the individual when producing ideas and dealing with an open-ended task. The latter is simply the number of ideas produced by the individual. So if the person produces ten ideas when asked to list uses for a shoe, his or her ideational fluency is 10. If those ideas are “for basketball, for cricket, for tennis, for squash, for football, for fashion, to smash bugs, to look tall, protecting feet, to produce bad odors,” flexibility is probably 6 because six conceptual categories are used. The first five ideas there are all in one conceptual category (sports), but the other five are in varied categories. Flexibility is a very important aspect of DT because it is indicative of the individual’s adaptability. A flexible person is unlikely to get stuck in one conceptual category, which means he or she can avoid one of the biggest problems there is when solving problems, namely, getting stuck in one intellectual rut (Adams 1979; Wicker 1985).

DT is best understood by contrasting it with *convergent thinking*. This is used when a problem is closed and can be solved by simply remembering what is the conventional or correct answer. If a task has one correct answer, it will probably only elicit convergent thinking. So while DT leads to numerous ideas, CT leads to one or very few. While DT may be flexible and original, convergent thinking leads to ideas that are conventional and thus unoriginal.

Often, when discussing creativity, DT and convergent thinking are treated like two ends of a dichotomy, but in reality they frequently work together. This is because DT may lead to original ideas, but creativity is more than originality. Creativity also requires effectiveness (Runco and Jaeger 2012). It may sometimes also require authenticity and some aesthetic quality (Kharkhurin 2014), but at a minimum, it requires originality and effectiveness. CT works with originality in actual creativity to insure that ideas are effective as well as original. Detailed explanations for how they may work together have been presented by Eysenck (2003), Cropley (2006), and Runco and Chand (1995).

This view of creative thinking, involving both DT and CT, takes us to another point where we can put into words exactly why creative thinking, and DT in particular, is necessary when answering the

question of “what is possible?” As noted above, answers to that question could be found by logic. Such answers could be found by some linear or associative thinking. True, associative processes can eventually discover a remote associate which is original because it is distant from the initial problem state, but still, linear processes only operate in one or very limited directions. All other things being equal, linear processes are probably best for exhausting one train of thought or for exploring (and perhaps exhausting) one category of ideas or one direction of ideation. That will offer a very limited answer to “what is possible” because the range of things this is possible includes antitheses, opposites, contradictions, and ideas that are only loosely connected to the initial problem space – or not connected at all. DT is useful when the problem space is vague, or changes, or misleading.

To bring this point home, think about an associative chain of thought. As Mednick (1962) described the process there is a starting point (e. g., a problem, question, or just initial idea) and then associations follow. Obvious associates come to mind quickly, before less obvious and common associates. If a person ponders things that howl (the starting point for the process), a quick associate might be wolf, coyote, or dog. This leads to another associate, which leads to another, and so on. There is, then, a chain of associates. Importantly, it is essentially linear and the associations are often found using experience, or traditional logic. After the obvious initial associates, there may be some divergence. Ideas may be found by exploring options and directions that are not connected with traditional logic and perhaps represent very loosely connected branches of thought. That is of course what divergence implies.

Two things should be emphasized: one is that divergence indicates that thinking is moving in different directions. It may also benefit from leaps, where the gap between ideas is large. Barron (1995) referred to this kind of thing as the interstices of thought, and for some people, those gaps might be sizeable. Two ideas may be closely associated (dog:cat, day:night), but they also may be only moderately associated (day:time

or day:sunburn) or even very loosely connected (day:history or day:battery). Thinking may rely on close associates or loose associates, though no doubt most of use both at different times. Very likely certain people are better at using and appreciating loose associates than other people – and are more creative thinkers because of it (Mednick 1962; Acar and Runco 2014).

This approach to creative thinking can be taken several steps further, but we must use our imagination. The extreme view cannot be captured with a two-dimensional graphic. But it can be described: imagine a circle representing all possible ideas, and then one vector, starting from the question of “what is possible” but only moving outward in a linear fashion. This may offer options for “what is possible,” but few if any original or surprising ones. Next consider a sector of that circle – a slice of pie, to use the food metaphor – which offers answers to “what is possible.” The sector is broader, so it is more likely that original possibilities would be found, but still, all ideas are in the same direction and, even more importantly, the same plane. That slice of pie might contain all ideas that are suggested by the current state of affairs or what is currently known and accepted. This slice may offer more than the vector, but still the ideas suggested by what is currently known or accepted do not do justice to everything that is possible. It may not predict paradigm shifts, for example, or things that are possible but not connected to current state knowledge.

To really think about “what is possible,” the entire circle needs to be considered. In fact, it is not a circle; it is a globe, without boundaries. As we shall see, there is a model of DT that helps to describe such wide options to “what is possible.” To its credit, there is some tentative empirical support for this kind of unbounded creative thinking.

Empirical Research on and New Theories of DT

There is empirical support for the relevance of DT for the question of “what is possible,” but before summarizing it, something should be said about

the more general empirical rationale for DT as a useful approach to creative thinking and for DT tests as useful estimates of creative potential. When DT data are collected correctly, the resulting scores are quite reliable and distinct from expressions of general intelligence. What is “correctly”? Simplifying some, DT data should be collected under relaxed or even game-like conditions. What must be avoided are test-like conditions that make an examinee think that there are expectations about correct answers, or that grades or points will be given. DT data collected under this kind of test-like conditions are misleading. There is not much originality. In addition, when DT tests are given under test-like conditions, the scores tend to be correlated with GPA and scores from IQ and other convergent thinking tests. That lack of *discriminant validity* (i.e., the separation of divergent from convergent thinking) is due to the testing conditions. When DT tests are administered as if they are games and conditions are more relaxed, without expectations and evaluations, examinees feel that they can think in original ways and their ideas are independent from convergent thinking. This all applies to everyone, not just selected examinees: individuals who receive DT tasks in test-like conditions may show little originality, but if DT tasks are later given with relaxed instructions, those same individuals are highly original.

The *predictive validity* of DT test scores is also respectable. One investigation used multivariate methods to take ideational fluency, originality, and flexibility into account (as a statistically optimized variate). The canonical predictive validity coefficient was 0.55, which is larger than any predictions using IQ or even personality measures to predict real work achievement. Another study of predictive validity covered 50 years (Runco et al. 2011). The predictive validity coefficient was lower than the 0.55 just mentioned, and predictions were only accurate for certain kinds of real-world creativity, but the prediction was statistically significant (approximately 0.30) – even when the DT data were collected 50 years before the criterion data were collected!

Thus there are reasons to view DT as valuable and scores from DT tests as reliable indicators of

the potential for creative thought. The empirical studies with direct relevance to the “what is possible” question can be summarized next. Several of these use DT tests which contain questions that are directed perhaps not to the future, but to topics that require the same sort of thinking. Torrance (1995), for example, had a test he called *What If*, which was of course open-ended but pointed to things that could possibly occur. The examinee was asked to think divergently about the ramifications of some hypothetical event. Just to name one example, “What if the Earth was covered by water?” Another example of the “What If” task can be found in research on the impact of TV on children’s creativity. This research sometimes shows children an animated show and, after it has ended, asks them “What if this was different?” Of course the “this” was something concrete, such as “What if that character was stronger” or “What if suddenly the witch returned to the village?” This is just one example of how the “What If” task has been used to study creative potential. Interestingly, it seems to be best to ask children “What If?” before a show has concluded. If children have seen the end of some show, they may have trouble thinking of wildly divergent and original alternatives. The ending they saw may constrain their thinking and everything they do think of is similar. This is not far from what was said above about logic: it sometimes leads on one direction and does not branch out to nonlinear directions, and these branches are often where original ideas are found.

Guilford’s (1968) *Consequences Test* is even more popular in the creativity research. It presents examinees with a situation and, like “What If,” asks for ramifications and implications. These two tests contain questions about some unrealistic possibilities (e.g., the earth is completely covered by water, strings hang down from clouds), but that is in part to encourage people to really use their DT. When DT tests are highly realistic, people tend to rely on experience and memory, so they are not as original as they can be (Runco and Acar 2019).

Mumford et al. (1998) focused on what they called *forecasting* – a skill that is by definition focused on future possibilities. Mumford et al.

adapted Merrifield et al.’s (1962) *Consequences Test* for this research. As Mumford et al. (2001, 2002) defined it, forecasting involves the projection of future outcomes. They described how forecasting is a part of (and subsumed under) planning. Mumford et al. go into detail about planning and point to various activities, including backup planning, case retrieval, information gathering, and the refinement of plans. Forecasting is also, for Mumford et al., inherently dynamic and for that reason requires regular monitoring and, very likely, real-time updating. If done correctly, the planning process, which includes forecasting and then updating, is enormously useful to organizations. It allows them to identify contingencies and restrictions in the environment and prevent potential problems before they occur (Mumford et al. 2002). Moreover, an increased range of situations or outcomes can be envisioned through forecasting. Forecasting enables a consideration of a broad range of causes, which may have an impact on outcomes and success. It may point to a direction or even method leading to a preferred outcome.

The “What If?” and *Consequences Tests* were developed some time ago, and although they continue to demonstrate usefulness, as in the work on forecasting, even more telling is the research where the model of DT has itself been modified to allow for thinking that can explore the broadest possible universe of what is possible. This new model may be especially useful for thinking about paradigm shifts and things that are only loosely connected to what is currently known. This model points to *literal divergent thinking* and *cognitive hyperspace*. Those labels sound like jargon but are nicely descriptive and perfectly apt. The first of them, literal DT (LiDT), was proposed when Acar and Runco (2014) reviewed methods used to study DT and found that most constrained the cognitive process such that more linear processes were involved rather than truly divergent processes. They described how tasks used to assess DT or exercise it too often allowed linear thinking or, at most, thinking in a finite number of directions. Imagine the universe of all possibilities depicted as a circle thinking might go in any direction within the 360 degrees implied by the

circle. Most of the time, before the model of LiDT was proposed, DT tests and tasks only considered some small portion of that universe – one constrained segment or sector. That is not full divergence. Far from it. Acar and Runco attempted to expand the measurement of DT to allow for all 360 degrees. They labeled the processes used for such broad ideation literal DT.

In fact they described creative thinking that can go beyond 360 degrees, which is where cognitive hyperspace comes in. This concept was suggested by the fact that a circle is two-dimensional, and this implies that thinking does not literally go in all possible directions. A circle allows 360 thinking, but Acar and Runco argued that individuals can go beyond linear thinking and go beyond two-dimensional thinking. Individuals can find additional alternatives by exploring perpendicular, multidimensional paths of thought.

Think of it this way: there may be one associative chain of thought which follows one linear logic. If the conditions are right, that line of thought can take a right turn and explore very different ideas – ideas that would not be found if only linear thinking was used. It is a right turn in the sense of being perpendicular, and it is perpendicular in the sense that the ideas found are extremely different from those found along the original line of thought. Ideas in the original line of thought may all relate to technology, just to name one conceptual direction, but then there is the turn, and the ideas now relate to food, or economic, or something quite different.

Keep in mind that the physical world only allows three dimensions, but the cognitive world is not so constrained, and in fact a person can make another right turn and explore another perpendicular line of thought, and another, and another, and another, into cognitive hyperspace. This is not random thinking if the person is following a process, and there is one connecting point or intersection for each perpendicular. Thus instead of a 2D circle representing the universe of what is possible, the theory of LiDT and cognitive hyperspace imply that there is some n -dimensional realm that more accurately depicts “what is possible.”

Note that this allows much more originality than “out of the box” thinking. Out of the box thinking might very well be two-dimensional. It is better than in the box thinking, but not as rich as explorations of cognitive hyperspace.

This approach to DT and the theory of LiDT is quite relevant to the focus here and the question of “what is possible,” but first it may make more sense if the actual tasks used in the research are briefly described, even though they are in their infancy. The most relevant aspect of the method used for LiDT is that which examines ideas that are feasible and ideas that are not feasible. Various other dimensions of ideation can be (and have been) examined; and in fact feasibility is not the end-all for addressing the question of “what is possible?” What is not feasible now may be feasible in the future. Just look at airplanes, or cellphones, or walking on the moon. Not long ago those were each considered infeasible.

Acar and Runco (2015) examined LiDT with fairly traditional tests of DT. The innovation was to develop a scoring system that captured cognitive hyperspace. Of course not every direction of thought could be operationalized! This was the first attempt at LiDT so it was only vital to go beyond two or three dimensions. Acar and Runco did review previous research on DT and were able to identify 13 dimensions of thought that could be used to categorize all ideas from a set of 6 tests of DT. Initial analyses showed that 11 of the 13 dimensions were highly reliable so subsequent analyses focused on these 11 categories. Importantly, each category was dichotomous so the dimensionality of the scoring was much more complex and closer to cognitive hyperspace than 11 dimensions may sound. Analyses indicated a dimensionality of thought (where an individual’s ideas did in fact represent nonlinear thinking) was correlated with other measures of creative potential, including originality. This was true even with ideational fluency (the number of ideas produced) statistically controlled. The key dimensions were impractical, synthetic, breadth, non-natural, infeasible, playful, and remote – all at the same time. Several

dimensions, including practicality, were negatively related to originality. Acar and Runco did calculate an overall index of LiDT from all dimensions, which was also correlated with an index of originality, even after fluency was statistically controlled. They concluded that LiDT can be empirically examined and that future research might expand on the number of dimensions used when scoring DT. Even with the initial 11 dichotomous dimensions, it is easy to see how looking to LiDT would offer a wide range of options when considering the question, “what is possible?”

Conclusions

Much of the research cited herein used test of divergent thinking. This should not be taken to imply that divergent thinking is synonymous with creativity. There are other theories of creative thinking. The emphasis here on divergent thinking reflects the fact that the theory is compelling and the measures are reliable, and they are especially helpful when thinking about possibilities and optional solutions, including those that could be used to answer the key question, “what is possible?” If the intent is to understand creative thinking as it might be used in other ways, in addition to the key question of the present volume, then things that work with DT should be recognized. Runco and Chand (1995) put DT into a larger framework and presented a process model of creative thinking that included, first, problem finding and then moved to DT (where options are generated) and then to evaluation and judgment (where ideas are selected and tested). They also included extracognitive influences on this process because DT is influenced by knowledge (both declarative and procedural) and motivation (both intrinsic and extrinsic). Guilford (1968) and others have also pointed to influences on DT and processes that may work with it. The point is that DT does not work in isolation.

Along the same lines, the very first paragraph of this chapter might be revised because it is simplistic to completely eliminate logic when thinking about DT. As a matter of fact, Runco

(2006) described a logic (or systematic processing of information and drawing of inferences) that may be unique to and required by creativity. The idea here was that DT and other forms of creative thinking are consistent, even though they lead to original insights – insights which may not be obvious when using traditional logic. Simplifying some, the logic that is unique to creativity may include or “weigh” original elements and details heavily, given that creative insights must be original. There may be a logic to creative thinking, but it may not appear to be logic because it differs from traditional logic.

This volume contains numerous chapters, each of which says something about “what is possible.” One of the other chapters focuses on *malevolent creativity*. There is an interesting and important overlap between that chapter and this one. This overlap results from the fact that when DT or LiDT is used, thinking may go in all kinds of directions, and unless there is some guidance or constraint, some of these might be socially desirable, but others might not. DT can lead to both benevolence and malevolence. If there are few or no constraints on the DT, both are likely, and perhaps equally likely. Malevolence is not really a desirable thing, and it may be tempting to direct DT so that only benevolent ideas are generated. Yet that kind of constraint will not just preclude malevolence. It will also cut down on the overall number of original and benevolent ideas. Thus this is not just a theoretical concern. Teachers and managers who wish for very original ideas must be prepared for all kinds of ideas – ideas from every direction, not just the directions that are consistent with their own values and expectations.

Some theories of creativity do not recognize divergent thinking at all. Quite a few point to combinatorial processes. These describe how a seemingly new idea may arise from the recombination and rearrangement of existing ideas (or bits of information). The interesting thing about this approach is the implication that there is no actual originality. After all, if a seemingly new idea is simply the recombination of what already existed, the new idea is really not entirely new. The pros and cons of theories that point to DT or combinatorial processes are explored elsewhere,

and for the present purposes, what is most important is that the recombination approach to creativity may not lead to a very wide range of options when answering the question of “what is possible?” It would probably not lead to as many options as DT, and the theory of LiDT leads to even more options than the original DT model. These two approaches, describing DT or LiDT, describe thinking that leads to a very broad range of options, some of which may in turn lead to original answers to the question of “what is possible.”

Cross-References

- Creativity
- Intelligence
- Novelty
- Open-Mindedness
- Potential
- Problem Finding

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Divine Comedy

Teodolinda Barolini
Columbia University, New York, NY, USA

Keywords

Fiction · Possible world · Virtual reality ·
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boundaries

Definition

Dante's *Divine Comedy* is fully engaged with the possible, for the poem is the imagining and setting into words of a completely realized possible world. This possible world – or virtual reality – is designed in such a way as to compel readerly suspension of disbelief. The diffusion of the text in the first decades of the fourteenth century prompted the arrival of two support industries, one providing commentary on the text in prose and the other providing illustration in images. These industries, which have flourished from the fourteenth century to our own times and are now global in nature, are the standard responses to the creation of a possible world, as the case of Tolkien demonstrates. But Dante's imagining of the possible does not stop at the creation of a text that has a legitimate claim to be called our premier virtual reality. He conjures a paradise that is a true going beyond space-time and, indeed, an anticipation of modern physics. In this way, and also in social-cultural ways, Dante imagines a possible that stretches the mental boundaries of the world he lived in, and that in some ways still challenges us today. He transgressed the boundaries of his world socially: for instance, Dante imagines the possibility of saving outcast groups, such as virtuous non-Christians and homosexuals. He also imagines that women need not be silent, as per the Pauline dictum, but can be great teachers, although young and beautiful. Dante gave posterity the gift of the possible.

The Possible *Divine Comedy*

The *Divine Comedy*, a long narrative poem of 100 cantos written in Italian in the first decades of the fourteenth century by Dante Alighieri (1265–1321), tells the story of the author's journey through the Christian afterlife. The Christian afterlife as it was conceived in pre-Reformation Catholic Europe comprised hell, purgatory (as a relatively recent addition, purgatory would be excised by Protestants; see Le Goff), and paradise. Dante's poem therefore comprises three volumes: *Inferno*, *Purgatorio*, and *Paradiso*. According to Dante's fiction, the journey took place in the year 1300, when the poet was “in the middle of the path of our life” (*Inf.* 1.1); Dante was, conveniently, 35 years old in 1300. The chronology of the fiction is minutely sustained throughout the work by complex astrological indications of the time of year (at the beginning of the journey it is spring-time, in the sign of Ares) and time of day, and the fiction itself is buttressed by elaborate truth claims that insist on the revealed nature of the journey and of what the poet witnessed.

The acceptance of the fictional nature of the *Divine Comedy* has been hard won, in critical terms. Authors who create fully realized possible worlds, compellingly realistic virtual realities, have various methods of bringing about the suspension of disbelief in their readers. That suspension of disbelief and what it allows the reader to experience is the great gift of art; indeed, it is the gift of the possible. But it also clouds critical response, and never more so than in the case of Dante's poem, which is a virtual reality based on a revealed religion. A virtual reality that is based on a revealed religion poses a much more complex critical problem than most fantasy fiction, given that in such a case the response to the work of art – the suspension of disbelief that it provokes – is conflated in the minds of many readers with belief in their religion. Because of the religious nature of the content of Dante's poem, the commentary tradition, which originated in Italy in the fourteenth century, frequently gives the impression of accepting the truth claims of the poet, while caviling over this or that rhetorical choice or

emphasis. Twentieth-century critics like Auerbach, Singleton, Nardi, and Barolini have striven to disentangle the poem written by Dante Alighieri from the religious presuppositions that support it. But Dante is a wily poet, and the *Divine Comedy* is remarkably capable of generating suspension of disbelief even among secular readers.

The ability of the *Divine Comedy* to provoke readerly suspension of disbelief is commensurate with its ability to create a possible world so compellingly real that we can legitimately consider it our premier textual virtual reality. The “proof” of such status is that the diffusion of the text immediately spawned two industries that began in the fourteenth century and continue to flourish today: one provides commentary to the text in prose and the other provides illustration in images. Both industries indicate that readers were responding to a perceived “reality” that required glossing, scholastically and figuratively. The scholastic tradition of accompanying commentary glosses the text and thereby aids the reader in reconstructing the possible world that Dante constructed; it began in the fourteenth century in Italian and Latin, and is now a global industry. Painters too responded immediately and a vast treasure house of illustrations of the *Divine Comedy* now exists, in a tradition that began as illuminated manuscripts and that now spans many media and many nationalities.

Narratological analysis has illuminated the kinds of techniques that Dante used to create his possible world (Barolini 1992). These techniques span the gamut from the flashy and overt to the micro and unnoticed. Dante’s explicit claims of being a truth-teller include his addresses to the reader (Auerbach 1954; Spitzer 1955). Dante frequently claims the status of inspired truth-teller, whose inspiration derives directly from a transcendent source, as in the invocation to Apollo at the beginning of *Paradiso*. We can see here not only Dante’s habitual conflation of classical divinities with the Christian God but also his understanding of inspiration as a literal “breathing into”:

O good Apollo, for this final task
make me the vessel of your excellence,
what you, to merit your loved laurel, ask.

Until this point, one of Parnassus’ peaks
sufficed for me; but now I face the test,
the agon that is left; I need both crests.
Enter into my breast; within me breathe
the very power you made manifest
when you drew Marsyas out from his limbs’
sheath. (*Par.* 1.13–21).

Dante is also supremely clever at embedding into his text quasi-subliminal truth claims that are not noticed as such (Barolini 1992). Techniques of this sort belong to a kind of representational mirror game that is on display in the opening verses of *Inferno* 3, where we encounter words that are allegedly written by the gate of hell itself, rather than by the author of the poem. The famous beginning of *Inferno* 3 – “Through me the way into the suffering city, / through me the way to the eternal pain, / through me the way that runs among the lost” – are composed in a first person singular that is usually not interrogated by commentaries. The “I” of hell’s portal presents itself as confidently and unquestioningly, and as mendaciously, as the “I” on the computer screen of a bank’s automatic teller that announces, “Sorry, I am temporarily out of service.” A measure of Dante’s success in using such tactics is provided by the history of critical response to these verses, which has rarely stopped to consider how they invest the subjective author of the *Inferno* with the objective authority of the divine “author”: the divine maker of hell.

In this way, Dante works to blur our sense of the distinction between the fabricated text and the allegedly nonfabricated reality of which it tells. Other such embedded truth claims are even less noticeable. For instance, remaining in *Inferno*, there is Francesca’s claim that the husband who murdered her is now in “Caina” (*Inf.* 5.107). A reader has no way of understanding this statement without the help of a commentary (this is an excellent example of why commentaries were immediately required). Dante has his character supply a topographical name, without explanation that “Caina” is the (invented) name of the circle of traitors in his (invented) hell. Dante thus works, subliminally, to convince us that the names of his virtual reality are “real”: the implication of Francesca’s statement is that *Caina* is a real place whose whereabouts are known and do not

need to be glossed. A similar subliminal truth claim involving location is the verse that opens *Inferno* 18: “There is a place in Hell called Malebolge.” Again, Dante confers truth status on the place in his hell that he names “Malebolge” (Evil Pouches) by implying that it is so named by others: by whom, after all, is this place “called” Malebolge? These are all examples of the same kind of representational illusionism that is inaugurated by the writing on hell’s gate.

Embedded truth claims indicate a reality that exists outside of our frame of reference and thus confer reality on the possible world being created. Dante also explicitly tells his readers of a reality beyond our frame of reference. For instance, the opening verses of *Inferno* 21 declare: “We came along from one bridge to another, / talking of things my Comedy is not / concerned to sing.” What are those things of which Dante and Virgilio were speaking as they made their way over the bridges that connect one evil pouch of Malebolge to another? If only we knew. . . Similarly, Dante peoples his afterlife with some fictional characters but mostly with historical persons who lived before us: whether this be a dynastic wife like Francesca of Rimini (*Inferno* 5) or the great Roman poet Vergil, the first character whom Dante meets (*Inferno* 1). Techniques of this kind function as remarkably effective contributors to a textual metaphysics that seeks to persuade us to accord it the status of reality. The reception of the *Divine Comedy*, which reveals the degree to which critics as well as readers have historically participated in an uncritical and almost unconscious belief in the poem’s truth, indicates that Dante’s quest to be taken as truth-teller has been spectacularly successful.

Dante’s creation of a fully realized virtual reality also encompasses a carefully thought-out topography and mythography for his afterworld. In *Inferno* 34, he explains the creation of hell and Mount Purgatory (Dante was the first to imagine purgatory as a mountain) as the result of Lucifer’s fall from heaven. In falling from his position as the highest of the seraphim, Lucifer excavated the cone that became hell; the displaced earth became Mount Purgatory. In his journey through paradise, in particular, Dante embraces metaphysical ideas

that in his culture were categorized as forms of mysticism and ecstasy, but that he was unusually able to think through and configure physically and geometrically. There are ways, indeed, in which *Paradiso* anticipates modern physics. This is the thesis put forward by Mark A. Peterson, in his essay “Dante and the 3-sphere,” abstracted as follows: “We describe three different methods of visualizing the ‘closed universe’ S^3 , and point out language in Dante’s *Divine Comedy* which suggests that he visualized his universe in the same ways, making his universe topologically S^3 ” (Peterson 1979, p. 1031). Dante conjures a cosmology that builds a paradise that is not the traditional pastoral garden or heavenly Jerusalem, but that instead allows for a true going beyond space-time. As a philosopher, Dante offers his readers an investigation that anticipates the ideas of modern physics; as a writer, he anticipates the idea of time-travel.

A constructed possible world of such precision, one that is also a work of art of extraordinary caliber, cannot avoid being a vast thought experiment: a vast clearinghouse of the possible. This aspect of the *Divine Comedy* has been occluded by its success: to the degree that the poem has traditionally been accepted as a true (enough) description of the Christian afterlife, one that is frequently cited in Catholic Encyclopedias with no acknowledgment of its heterodoxy, its many ideological deviations and inventions have been ignored or even suppressed. There have been cultural forces at work in abetting such suppression, which we can see even in recent times, for instance, in the inaccurate invocation of Dante in the debate on same-sex marriage in Italy. Dante’s deviations from orthodoxy and from cultural norms constitute an investigation into the possible, one that has special value because of the cultural status of the *Divine Comedy*: its relationship to received religion and therefore to human belief.

For instance, in the area of gender and sexuality, an area that has traditionally been severely policed by cultural norms, Dante is an outlier. While he puts male “sodomites” in his hell, he also puts unidentified sodomites on the terrace of lust in his purgatory, a fact that has been far less

noticed over the last seven centuries. Given that all souls in purgatory are saved, and are perfecting themselves in preparation for their transfer to paradise, by placing sodomites in purgatory Dante effectively creates the category of saved sodomites. Dante puts a group of homosexuals next to a group of heterosexuals on the terrace of lust in purgatory (*Purgatorio* 26), where both groups purge their excess lust. In Dante's possible world, the status of the two groups of souls on purgatory's terrace of lust is identical and equal: both homosexuals and heterosexuals are equally saved and equally destined for residence among the blessed in paradise.

The presence of same-sex lustful in purgatory was brought to the fore in Dante criticism only quite recently (Boswell 1994; Pequigney 1991), indicating that Dante's thought experiment of saved homosexuals had been rejected or at least ignored by many of his readers. In fact, truth be told, Dante's cultural authority has traditionally been used to counter and to quench the possible. Thus, Dante's authority was deployed in a debate on the possibility of same-sex marriage in Italy by a former Italian Prime Minister, who noted that "i sodomiti nella *Divina Commedia* finiscono nell'inferno" [sodomites in the *Divine Comedy* end up in hell] (Calabrò 2007). Dante does put sodomites in hell, but he also puts them in purgatory, and therein lies all the difference.

With respect to women, too, Dante sees possibilities not envisioned by his culture. His *exposé* of the political ills of his society focuses on the ways in which the consolidation of power in the hands of "tyrants" corrupts society, enabling greed and denying freedom. The same analysis also demonstrates how the power dynamics in dynastic families corrupt the bonds of familial love and affection: wives and children are passive pawns to be deployed by the powerful in the great game of dynastic politics. This analysis is the backstory of Francesca da Polenta of Ravenna, damned in the circle of lust in *Inferno* 5. Her arranged marriage to Gianciotto Malatesta of Rimini, in pursuance of an alliance between their fathers, the lords of Ravenna and Rimini, resulted in Francesca's love affair with Gianciotto's brother Paolo and their deaths at the hands of the

enraged husband. Francesca was unimportant, in dynastic terms; her murder circa 1286 had no effect on the continuing alliance between the families, which was pursued by her brother after her father. Her life and death were destined for historical oblivion. Francesca's name appears only in the 1311 will of her father-in-law, and only because he discusses her dowry. Had it not been for Dante's account in the *Divine Comedy*, Francesca's name would have been lost to history (Barolini 2000).

Dante shows that he is able to imagine the desperation of the dynastic wife and to give her a voice and a name. This is what he does in *Inferno* 5, making of the unknown Francesca a cultural touchstone and icon, the heroine of countless retellings in many media. Dante's interest in the victimization of dynastic women continues with the brief account of Pia de' Tolomei (*Purgatorio* 5), who was murdered by her husband, and then with the stories of Piccarda Donati and the Empress Constance (*Paradiso* 3): both were forcibly removed from convents to which they had gone voluntarily, and constrained into dynastic marriages against their will. Piccarda was Florentine and sister of Dante's good friend Forese Donati, so her story was well known to him. All these narratives accord personhood to women who were denied agency while they lived. In this way, Dante insists on the issue of female agency, female volition, and makes the case that will and agency are features of all humans, not only of men.

The most famous woman of the *Divine Comedy* is Dante's early love and guide, the Florentine Beatrice Portinari (her last name comes from Boccaccio, not from Dante's own writings). To understand the transgressive nature of Dante's Beatrice, it is important to consider the point made by Joan Ferrante, who explains that Dante puts her "in a role which is specifically forbidden to women by major theologians, as priest, as confessor and teacher of theology" (Ferrante 1992, p. 4). Labeled by one critic *Beatrix loquax* or "loquacious Beatrice" (Barolini 1992, 2006), the amount and variety of speech afforded to Beatrice in the last canti of *Purgatorio* and *Paradiso* is remarkable. Beatrice's voice is not gender-specific; she

speaks with male authority, as teacher, philosopher, and indeed theologian. Ferrante (1992) points out that Dante's Beatrice behaves "in flagrant defiance of Paul's injunction, frequently echoed in the thirteenth century, against women teaching" (p. 4). While there is a tradition of female abstractions who speak authoritatively, like Lady Philosophy in Boethius's *Consolation of Philosophy*, there is no precedent for such verbal authority coming from the mouth of a historical woman: a young woman, a woman described as beautiful and desirable. Beatrice's voice is the amplified and commanding version of the voices of other women like Francesca, Pia, and Piccarda. Most of all, Beatrice's voice testifies to the possible: a possible that was beyond the ken of Dante's early readers, and that still challenges us today.

Another arena in which Dante gave his readers the gift of the possible is with respect to the cultural other, a topic that requires a brief discourse on the idea of Limbo. In the Catholic imaginary, Limbo is a place in hell where the pain of hell is mitigated for some souls, souls whose special status confers upon them a special exemption. Because of these extraordinary privileges, Limbo was defined by theologians with care and precision. Limbo consisted of a *limbus patrum* ("Limbo of the fathers"), the temporary condition of Old Testament saints as they awaited their liberation by Christ, and a *limbus infantum* or *limbus puerorum* ("Limbo of infants" or "Limbo of children"), the permanent condition of infants and children who died prior to baptism. The Old Testament saints were liberated by Christ when, immediately following the crucifixion, he entered hell and transported the biblical righteous to paradise. Therefore, after the death and resurrection of Christ, there were no more adults in an orthodox Limbo. There were only unbaptized children.

Dante's Limbo, in *Inferno* 4, is unlike any other in the history of this religious idea (Barolini 2022). For, after noting the presence of infants in one word, Dante's attention is given over to the other group with which he populates his Limbo: adult virtuous non-Christians.

Dante's Limbo houses mainly pagans who lived virtuous lives before the advent of Christianity, and whose only sin was lack of baptism.

Along with the many Greeks and Romans of classical antiquity whom Dante places in his Limbo, he also includes three virtuous Muslims, born many centuries after Christian baptism had become available. The deviation from orthodoxy here cannot be overstated: in 1300, when, Dante took his journey to hell and arrived in Limbo, an orthodox Limbo could contain only unbaptized infants and children. And yet, Dante imagines that his Limbo, which by the way is also the only part of his hell where there are amenities (light, a noble castle, a lovely green meadow, and a charming little river), can be made available not only to the unbaptized children of Christian parents but to virtuous non-Christians. What accounts for so startling a deviation, so noteworthy a transgression?

The answer is an obsession with justice. Nor is this obsession a fluke, expressed in *Inferno* 4 and then forgotten. In *Paradiso* 19, Dante again raises the question of virtuous non-Christians, pointedly challenging the divine justice that could condemn a perfectly virtuous man, one who is virtuous in all his actions, simply because he happens to be born on the banks of the Indus river, where there was no one to inform him of Christ's existence:

A man is born along
the shoreline of the Indus River; none
is there to speak or teach or write of Christ.
And he, as far as human reason sees,
in all he seeks and all he does is good:
there is no sin within his life or speech.
And that man dies unbaptized, without faith.
Where is this justice then that would
condemn him?
Where is his sin if he does not believe? (*Par.*
19.70–78)

The fixation with justice that fuels the outrage in the above verses also focuses on the issue of equity of access. Thus, the poet formulates his challenge in terms of the modalities of cultural transmission: the man born on the banks of the Indus lives where there is no one to speak or read or write of Christ. How then can it be just to punish him?

The challenge to orthodoxy that rings out in the questions of *Paradiso* 19 – "Where is this justice that would condemn him? / Where is his sin if he does not believe?" – is also the spirit that animates

Dante's Limbo. In *Inferno* 4, Dante gives himself the gift of the possible: he imagines that the great accomplishments of classical philosophers, writers, statesmen, and warriors are such as to merit an eternity of conversation in the noble castle and pleasant green meadow that constitute his Limbo, the first circle of his hell. And that three virtuous Muslims partake of the same special dispensation. The names of these noble souls resound throughout *Inferno* 4: 15 Greeks (Homer, Aristotle, Socrates, Plato, Democritus, Diogenes, Anaxagoras, Thales, Empedocles, Heraclitus, Zeno, Dioscorides, Euclid, Hippocrates, and Galen), 15 Romans (Vergil, Horace, Ovid, Lucan, Aeneas, Caesar, Latinus, Lavinia, Brutus, Lucretia, Julia, Marcia, Cornelia, Cicero, and Seneca), and 3 Muslims (Avicenna, Averroes, and Saladin).

And then Dante goes even further in giving himself license to imagine the possible and imagines that his possible world features also saved virtuous non-Christians.

We encounter the first saved pagan in *Purgatorio* 1: Cato of Utica, the Roman statesman for whom Dante had already expressed great reverence in his philosophical treatise *Convivio*. Later in *Purgatorio*, Dante will add the Roman poet Statius to his roster of saved pagans; finally, in *Paradiso*, he will add also the Emperor Trajan and Ripheus the Trojan. It is important to remember that the total exclusion of pagans from paradise would not have been problematic for Dante's original readers. As Kenelm Foster pointed out: "Catholic theology by and large did not much concern itself with the ultimate destiny, in God's sight, of the pagan world whether before or since the coming of Christ"; moreover, the "concept itself of *fides implicita* was not lacking . . . but it was hardly a central preoccupation of theologians, nor, in particular, do its implications for an assessment of the spiritual state of the world outside Christendom seem to have been taken very seriously" (Foster 1977, pp. 171–72).

It is also worth noting that Dante does not include contemporary Jews (as distinguished from biblical Hebrews) anywhere in his hell. This can be considered a fault (Tomasch 1998), given especially that Dante goes so far as to

include three Muslims among the virtuous non-Christians in Limbo. But one can also argue, especially in light of considerable medieval visual evidence that shows Jews in hell, that the avoidance of Jews in Dante's hell is a positive feature. In a context in which visual representations of hell were full of contemporary Jews, depicted with the stereotypical markers that served to identify them (Strickland 2003), the absence of any contemporary Jews in Dante's hell may be a good thing. In particular, it seems very noteworthy that Dante does not include Jews among his usurers in *Inferno* 17, although usury was a sin commonly imputed to Jews in the Middle Ages. Dante seems rather to go out of his way to make his usurers Christians from famous Italian families, and even to put around their Christian necks the moneybags that contemporary iconography typically associated with Jews (Barolini 2011 and 2022).

Why is Dante given so little credit for the openness that we find in his work? Dante's radical thought has been absorbed, defused, and ultimately effaced by the centuries of normalizing effected in the cultural sphere by the mechanisms of acculturation deployed by both the Church and the nascent Italian State. Of course, Dante is unusual only in the degree to which this destiny of acculturation awaited his masterpiece. The destiny of all successful and compelling radical thought is to be absorbed, defused, and ultimately effaced by Time: the destiny of truly immense cultural statements that meet with societal approval is to come to seem natural. Students respond to Dante's choice of the Roman poet Vergil to be his guide as obvious, natural, and discounted, when in fact, in Dante's time, it was anything but discounted: it was an unusual choice, an avant-garde choice. Because of the movement we call humanism, a movement that Dante's choice of Vergil as his guide heralded, his decision has come to seem obvious. Similarly, readers do not respond with amazement to Dante's claim in *Inferno* 11 that the structure of his hell derives from Aristotle's *Nicomachean Ethics*: time has drained all shock value from the spectacle of a Christian author claiming a pagan philosopher as his authority on sin.

Ironically, therefore, great cultural success results in radical thought that becomes invisible, either because it has been accepted and absorbed or because uncomfortable ideology in culturally sanctioned canonical texts tends to be reconfigured or ignored. The reception of the *Commedia* resulted in both kinds of invisibility: the selection of a classical pagan guide through the afterlife and of a classical pagan template for hell has been accepted to the point of no longer manifesting the deep commitment to humanism that it revealed in Dante's time; conversely, Dante's progressive treatment of sodomy was for centuries ignored by the commentary tradition and effectively elided from the poem. In the areas where the culture at large was not prepared to sanction or truly wrestle with Dante's vision, areas that include his most important and original ideological choices (for instance, that of a young female avatar of the divine), his choices are papered over or reconfigured, generally through allegory.

As a Christian, Dante believed in free will and was against the deterministic view, which he labels "Platonic" in *Paradiso* 4, that souls return to their natal stars. One could argue that an openness to the possible is technically the default position to anyone who is strongly committed to belief in free will. But such an argument is not convincing, for there are many Christian thinkers who are anti-deterministic but are not remotely as open to the possible in the social or cultural domains as Dante was. He seems to have seen ahead, to have been open to possibilities for humans that the society he lived in did not see or value. The *Divine Comedy* certainly seeks to impart moral lessons with respect to the vices to avoid and the virtues to attain if one wants to achieve salvation in the afterlife. But Dante also left his readers remarkable lessons with respect to what humans can hope to achieve in this life. Quite the contrary to the received opinion that holds Dante a teacher of Catholic dogma, rigid and monolithic, Dante is a radical thinker who shapes his possible world to interrogate the universe with respect to justice, freedom, equity, free will, and agency. He gave the gift of the possible.

Cross-References

- Fiction
- Poetry
- Political Imagination
- Positioning Theory
- Possible in Visual Arts
- Virtual Reality

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Dreams

Neil German
Webster University, Geneva, Switzerland

Abstract

Dreams have long connected mankind to an unknown dimension and fascinated human beings for thousands of years, thus inspiring them to realize a potential within themselves and to delve into the mysteries of what must have seemed an incomprehensible world. References to dreams can be found in ancient civilization such as Mesopotamia, Egypt, Greece, and Rome; however, it is easy to imagine that dreams inspired humanity way before and guided the great strides in human development such as the discovery of fire, the hominids migration out of Africa, and the cave art found throughout Europe.

Although the outlook on dreams has changed towards history, the common thread from the ancient civilizations to our modern times is the impression that dreams connect us with another world which can generally be identified with a beyond that transcends human contingences and yet is concerned with them. Be they messages from the gods, from the dead, or from the unconscious, dreams intervene to support and guide human life with a symbolic language that needs interpretation. The attempt to understand the oneiric language is another thread that runs throughout the history of dreams and points to the need for humans to search for meaning.

This entry presents a short history of dreams, which highlights the human relationship to the beyond, from the ancient

civilizations to the more recent psychodynamic approaches in psychology, with particular attention to Freud and Jung. It also shows how dreams express and foster the possible in many ways: Through their symbolic and multilayered language and through their connection to the unconscious, they inspire creativity in artists and in daily life, influence scientific discoveries, and culture.

Keywords

Archetypes · Dreams · Dream history · Individuation process · Music · Possibilities · Repression · Science

Dreams connected the earthly human experience to the world of the beyond, since they were messages from the gods whose purpose was to warn and guide human life. They were similar to an oracle in that their language was symbolic and needed interpretation. With the advent of writing, we have evidence of civilizations' fascination with dreams. The Mesopotamians, Egyptians, Greeks, and Romans had extensive and similar views on the origin and purpose of dreams, which were centered on religion, gods, and divination.

Ancient civilizations considered dreams as messages from the beyond, that is, the realm of the gods and the dead, that needed to be understood and integrated into daily life. Dreams guided important decisions both in private and public sphere, such as where to construct a building or whether or not to fight a war; they supported physicians in their work with the sick; they forecasted the future and represented a transitional space where humans could interact with the deceased and the supernatural. However, the messages from the beyond came in a symbolic language that could not be understood by many and needed interpretation. The "interpreters" were those who had wisdom and held a closer connection with the supernatural. They played an important social role and often had a lot of power.

Both in Mesopotamia and in Ancient Egypt, priests had the role of regulating the relationship between gods and humans, which granted them a

high social position and made them second only to the king or the pharaoh. Although they were mainly in charge of rituals, some of them had the gift to read the propitious signs in order to maintain the gods happy. Among the signs were omens and dreams.

Sometimes, dreams were interpreted literally; other times, great thought and contemplation was needed to understand the message from the other side. Skilled understanding of a prognostic dream had great implications for the society at large, but also for the interpreter. An example of this is the dream of the Pharaoh from the bible and how Joseph interpreted it, which was beneficial both to Egyptian society and to Joseph himself.

After two whole years, Pharaoh dreamed that he was standing by the Nile, and behold, there came up out of the Nile seven cows, attractive and plump, and they fed in the reed grass. And behold, seven other cows, ugly and thin, came up out of the Nile after them, and stood by the other cows on the bank of the Nile. And the ugly, thin cows ate up the seven attractive, plump cows. And Pharaoh awoke. And he fell asleep and dreamed a second time. And behold, seven ears of grain, plump and good, were growing on one stalk. And behold, after them sprouted seven ears, thin and blighted by the east wind. And the thin ears swallowed up the seven plump, full ears. And Pharaoh awoke, and behold, it was a dream. So, in the morning his spirit was troubled, and he sent and called for all the magicians of Egypt and all its wise men. Pharaoh told them his dreams, but there was none who could interpret them to Pharaoh (Genesis, 41, Verses 1–8).

Joseph, who was a Jewish slave and had been in jail, was known for his capacity to understand the language of dreams. In spite of his humble origins, he was summoned to interpret the Pharaoh's dream, which he did successfully in recommending to save as much food as possible for 7 years to prepare for the following 7 years of famine. This brought him good fortune because he was elevated to the Viceroy of Egypt.

The Greeks continued the Egyptian tradition of considering dreams as messages coming from the gods and a way to predict the future. Dreams could guide human actions, warn against dangers,

and inspire creativity. They also offered a glimpse into the mystery of the unknown and soon became a source of inspiration in literary creation (Del Corno 1982).

Dreams permeated ancient Greek literature from Homer to Plato and were integrated in the broader narrative. In the *Iliad*, gods support this or that party and used dreams to influence human actions. The second book opens with a dream that Zeus sends to Agamemnon, in the person of Nestor, to convince him to immediately attack Troy with the deceiving message that, in so doing, the Achaeans would have an easy victory.

In the book 19 of the *Odyssey*, Penelope asks Ulysses, whom she believed to be a beggar, to interpret a dream of hers where an eagle came down and killed the 20 geese that were around her. Ulysses took the dream as prognostic of her suitors' defeat. Another example of prognostic dream is Socrates' dream 3 days before he was put to death: "A beautiful woman in white robes came to him quoting the *Iliad*, To the pleasant land of Pythia on the third day thou shalt come" (Kramer 1988, p. 193).

The Romans were people of action who gave much importance to divination and had several methods of predicting outcomes. Haruspicy, the reading of animal intestines, was one way of understanding the future along with *auspiciu*m, the reading of the flight of the birds. These practices stress the importance of reading the signs before acting, in order to understand whether the gods gave their approval. In this context, dreams were often seen as prognostic or as a warning, and their interpretation was aimed at understanding the future. Roman history and legends offer many examples of this perspective. One of the best known is the dream that Calpurnia, Caesar's third wife, had the night before the ides of March when, according to Plutarch, she dreamt that the roof of their house had fallen, and Caesar had died in her lap (Plutarch 2013). Caesar, convinced by Brutus, decided to disregard the warning, went to the Senate, and was killed.

Inspired by the Greeks, Romans included dreams in literature and made them prove that the glory of Rome was the will of the gods. It is the case of Virgil's *Aeneid* which opens with

Aeneas' dream of Hector who warns him about the fire of Troy and tells him to take the Penates, the household gods, and cross the sea, after which he would build a new city (Virgil, *Aeneid*, II, 268–297). Thus, the dream proves that Aeneas was meant to end his journey on the coast of Latium and to become the heroic ancestor of the Romans.

With the advent of the Middle Ages, dreams continued to have great importance, were integrated in public life, and could communicate messages from the beyond. The Medieval preoccupation with dream interpretation occupied every social class. On one side, philosophers, theologians, and scientists try to explore the nature of oneiric life and classify dreams in different categories such as false and true, mundane, or divine. On the other hand, dream books and manuals of interpretation were appealing to common people who were more interested in the prognostic nature of dreams (Kruger 1992). These two trends were not always distinct. For example, referring to the situation in the Merovingian Gaul, Isabel Moriera maintains that, while some conservative views of dreams remained in the Christian church, there was a movement in the Merovingian church to accept the dreams and visions of layman (Moriera 2000).

The Renaissance continued with the importance on dreams. Dreams had a huge impact and became themes for renaissance paintings as well as scientific discoveries. Artists saw the possibilities for dreams to express the potential of man and to prove their worth. Sleep was the avenue to attain a freed soul that could enter a relationship with the beyond. Raphael's painting of *The Vision of a Knight* reveals that dreams could also confront us with choices. The painting reveals a young knight who must choose between two maidens representing virtue and pleasure. Anticipating Freud and Jung, some renaissance painters entered the world of the pagan and the erotic while other writers were attempting to reconcile their admiration for Greece/Rome with that of Christian teachings (Ruvoldt 2004).

Until the Renaissance, Western culture maintained the connection between the world of matter and the world of spirit, between the visible

and the invisible. Starting from the Scientific Revolution in the seventeenth century, this connection faltered. The cartesian dualism, in separating *res cogitans*, which dealt with the mind, from *res extensa*, which dealt with the body and matter, created a split between subjectivity and objectivity. Only *res extensa*, which is measurable, can be the object of scientific research while the realm of the subjective becomes questionable. Dreams fall in this second category and can deceive.

Enlightenment goes along with this idea. The *Encyclopédie* from Diderot et D'Alembert includes the voice "dream" only to say that dreams are tricks of imagination that pertain to the domain of metaphysics (Diderot and D'Alembert 1751). The Age of Reason dismissed the irrational and the subjective, which were reintegrated in Western culture at the end of the nineteenth century. The discovery of the unconscious revived the interest in dreams, which were to play an important role in the psychodynamic approaches in psychology.

Modern Views

In the second half of 1800, the communication with the beyond took an unexpected orientation with the rise of hypnotism. The French schools of Nancy and Paris-Salpêtrière discovered that hypnosis could unveil hidden skills, traumas, and personality traits that were unconscious in the wake state. In this way, the beyond that had previously been located outside of the human realm was relocated inside the human being. This had a profound effect on Freud who attended Jean Charcot's lectures on Hysteria in late 1885 in Paris. When Freud returned to Vienna, he embarked on his lifelong commitment to psychotherapy. His years of working with the dreams of patients resulted in his masterwork, *The Interpretation of Dreams*, published in 1900. This seminal work reawakened the public's interest in the unconscious once again.

The studies on hypnosis had revealed the existence of an unconscious part in the human psyche, which was not accessible or only partially accessible to consciousness. Understanding the nature

and the dynamic of the unconscious and how it played a role in the development and healing of neurosis became Freud's life commitment.

To understand Freud's theory of dreams, it is important to mention his model of the psyche, which is based on the tension of opposite forces. On one side, there is the *id*, which is the unconscious and irrational drive that opposes the *super-ego*, that is, the agency that sets the moral standards, the limits, and the rules of behavior conforming to the societal values. The *ego*, which corresponds to the sense of self, acts as a mediator between the *id* and the *superego*. When the ego is confronted with anxiety that feels overwhelming, an automatic blockage of the information occurs in the form of a defense. Inspired by the way the immune system attacks pathogens, Freud suggested that the psyche provides a defense system against invading information that consciousness cannot process. Typically, when the conflict between the *id*'s drives and the *super-ego*'s rules overwhelms the *ego*, defense mechanisms protect the ego from excessive anxiety (Freud 1976).

Similarly, the dream work proceeds in a way that protects the ego from the anxiety generated by disturbing oneiric contents, thus guarding the sleep. When creating a dream, there is a censor at work, which could block out painful dream images and substitute less threatening ones so that our sleep could be unencumbered. For this reason, in Freud's view, dreams had both a manifest and latent content. The manifest content was the literal meaning of the dream, its actual images and story; it was the superficial layer that was disguising the latent content. The latent content was the real, deep meaning of the dream, the one that needed to be discovered through the method of free association where patients simply came up with any ideas that they had about the dream symbol or experience. In making sense of the association, the latent content hidden in the unconscious could emerge to consciousness, which explains why Freud saw dreams as the royal road to the unconscious. Understanding contents that had been repressed, displaced, and denied through defense mechanisms would start the healing process from neurosis, which Freud

saw as mostly caused by sexual repression, where the ego partially blocked out the *id*'s desire in order to restore the reality principle. Eventually, Freud's insistence on sexuality as the cause of neurosis led some of his followers such as Adler and Jung to leave and form new schools (Freud 1976).

Carl Jung differed from Freud in proposing a dual unconscious, one being a personal unconscious from birth on, contrasted with a collective archaic unconscious filled with universal images that could affect our lives. He called these images archetypes, which meant original imprints built into the psyche over countless generations containing our ancestral history. Jung saw the possibility of reconnecting to lost energies if one could integrate the dream world. Dream analysis played an important role in therapy since deciphering dreams meant understanding the messages from the unconscious. However, instead of the reductionistic Freudian vision, Jung introduced a teleological approach which focused on the purpose and the direction of the psyche. In this theoretical frame, understanding the purpose of the dream was more important than finding what had caused it.

Dreams present to the dreamer a new vision that often offers a compensation for conscious thoughts and feelings. They can also indicate a direction towards further development and guide the dreamer in life. They could also clarify objective reality or have a prognostic side. In Jung's view, dreams are an important part of the dialogue between conscious and unconscious. Their symbolic language does not disguise repressed drives but, rather, enriches consciousness with new and multilayered meaning. Symbols, which are part of the language that the unconscious uses to reach consciousness, are evidence of the creativity of the unconscious. Even when they refer to personal life and experiences, symbolic images in dreams maintain a link with the collective layer of the unconscious, which is a reservoir for untapped potential and creativity (Jung 1963).

While Freud was trying to unveil defense mechanisms and understand the hidden content of dreams, Jung thought that dreams did not have a hidden content. Understanding the dream

images meant to reconnect with the deeper layers of the unconscious and undergo a process of transformation that he called individuation process: the process to become oneself.

Joseph Campbell, the mythologist who taught at Sarah Lawrence College, was influenced by both Freud and Jung and relayed how important it was to reconnect to the infantile unconscious where potentialities existed in the magic of childhood with all its mythological creatures and “goldens seeds” (Campbell 1949). In speaking about the potential and possibilities of the unconscious, Campbell stressed the creative power of dreams and stated that, “If only a portion of that lost totality could be dredged up into the light of today, we should experience a marvellous expansion of our powers, a vivid renewal of life. Moreover, if we could dredge up something forgotten not only by ourselves but by our entire civilization, we should become indeed the boon-bringer, the culture hero of the day—a personage of not only local but a world historical moment” (Campbell 1949).

The symbolic and psychodynamic perspective on dreams dominated the first half of the twentieth century. Then another trend emerged, which focused on the biological origin of dreams. The research on sleep and the brain came up with the hypothesis that dreams are created by the brain and pertain more to the world of physiology than to the one of symbols. Contemporary theories of dreams continue this view and perfect it with the support of new technology.

One of the leaders of this perspective was Allan Hobson, a dream researcher from Harvard, who saw dreams in a much different way than the psychoanalytic schools. His theory, which was called the activation synthesis model of dreaming, claimed that neuronal circuits in the brain stem become activated during sleep and that the brain tries to interpret and make meaning from these signals, henceforth the strange dream images and paralyzing situations during sleeping. Intense emotions, illogical content, sensory impressions, uncritical acceptance of dream events, and difficulty in remembering are all characteristics of REM sleep. Also, Hobson talked about “garbage can sifting,” which attributes to the brain the ability to select useful memories. In fact, the brain can

only retain so many memories within the hippocampus so that it must choose and select which memories to keep and which ones to discard (Hobson 2002). In this perspective, dreams do not conceal hidden meanings nor guide human consciousness in search for meaning. However, towards the end of his life, Hobson conceded that some dreams could be meaningful and relevant for personal life.

The Possible

The history of dreams, from the ancient civilizations to the psychodynamic and symbolic approaches, shows the human desire to create a connection with another dimension of life, one that, being spiritual and unconscious, can inspire human actions. The possible in dreams is essentially connective to the potential of transformation that they convey and to the creativity that they enhance. Their symbolic language is creative by definition, as symbols have multilayered meanings and require knowledge and imagination to be understood. Moreover, be it through their prognostic aspects or through their visionary suggestions, they have inspired human creativity and guided human lives.

The Jungian model is particularly useful to understand the possible in dreams, as for him dreams are the expression of both the personal and collective unconscious. On the personal level, they portray the dynamic of complexes while on the collective level they convey a universal message through archetypal images. The so-called big dreams come from the collective and archetypal level of the psyche. Those dreams can determine momentous changes in life and inspire creativity. Jung believed that dreams focused on the creative, prognostic, and teleologic potentials of mankind. One could say that dreams are creativity in action.

Jung introduced the concept of synchronicity which meant that ideas or premonitions could be validated in an external reality. Examples of scientific discoveries conveyed by dreams or synchronistic events are not rare. Jung and his colleagues related the following examples. Friedrich Kekule, who was a nineteenth-century

German chemist, had a dream that depicted a snake with its tail in its mouth. At the time he was contemplating the structure of benzene which left him frustrated. He interpreted the dream to mean that the benzene molecular structure was that of a closed ring. Elias Howe in 1845 dreamt of cannibals attacking him with spears that had a hole at their tip. He realized afterwards that this was the solution of how to complete his idea of the sewing machine with the thread going through the eye of the needle. Robert Louis Stevenson came up with the idea for Dr. Jekyll and Mr. Hyde from a dream that he had after contemplating man's dual nature (Jung 1964).

An interesting case that shows the inspirational role of dreams is the one of Niels Bohr who won the Nobel Prize for his work on the atom. Bohr had a dream that presented the image of a core with electrons spinning around it. This dream led him to discover the structure of the atom (Bohr 2008). Concerning Jung, he had dreams which led him to delineate his theory of the archetypes and the collective unconscious (Jung 1963). If these scientists and inventors had not followed their dreams and paid attention to the hints from the unconscious, the progress of humanity would have had a different course.

There are several instances of dreams adding to one's imagination and creativity in the world of music. Keith Richards of the Rolling Stones woke up one morning and from a dream understood the guitar riff for the song, "I can't get no Satisfaction," which he completed with a Gibson Fuzz-Tone Box, a recent invention which made an electric guitar sound like an organ (Richards 2011). Paul McCartney, of The Beatles, related two songs that were influenced by dreams, the first being the most recorded song ever, *Yesterday*, which has been covered over two-thousand times by other artists. He woke up one morning and had the music for the song. He was so struck by how beautiful the song was that he was convinced that he could not have possibly written it by himself (Bulkeley 2016). Also, another famous song, *Let it Be*, came at a time where McCartney was contemplating the end of The Beatles, but he desired for the band to continue. He dreamt that his mother, who died when he was 14, came to him and, in regard to The Beatles situation, said

simply, "Let it Be" (Oreg 2016). Regarding the relationship between music and dreams, Sting has said, "I think that any artist who ignores their dreams is ignoring half their creative potential" (Bulkeley 2016).

In 1963, Roy Orbison wrote a song called *In Dreams*, which was inspired by a night vision about the fact that he could only be with the one he loves while asleep at night. He woke up with the idea and the music for the song. David Lynch borrowed this song for his 1986 film, *Blue Velvet*, where the character played by Dean Stockwell lip synchs the song enlightened by a work light. Through this song, David Lynch was revealing the Freudian repressed contents in dreams and yet at the same time the Jungian orientation to the shadow which needs integration.

All these examples of how dreams have inspired creativity and guided artists and scientists towards new discoveries show that the unconscious offers unlimited potential. If human beings could accept that the unconscious is wiser than the conscious mind and that it is a treasure trove of information, this would be invaluable both to the individual and the society as a whole. Jung showed how fruitful the dialogue between unconscious and conscious can be. If we could follow his lead and integrate the unconscious messages that come through dream images, we could overcome the polarization between the opposites in the world. This would be an example of the potential of possibilities for all of us.

Cross-References

- [Creativity](#)
- [Invention](#)
- [Myths](#)

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Dystopia

Maria Laakso

Tampere University, Tampere, Finland

Keywords

Dystopia · Dystopian fiction · Future · Possible worlds

Definition

Dystopia is a literary genre that displays terrible and unpleasant worlds, conditions, and societies often placed in the (near) future. Dystopias do not merely imagine possible future conditions but also mirror the existing reality. Dystopian literature criticizes trends and flaws in the contemporary society (Baccolini and Moylan 2003, 2–5,

Mohr 2005, 28). This duality is one of its most identifiable genre features. Dystopias are often considered as warnings about what will happen if a given practice or trend continues: thought experiments on the outcomes of present actions.

Introduction

Dystopias are often thought to be the ultimate opposite to *utopia* that visions a perfect society. Despite the evident difference between the two, most theorists in the field consider dystopia to be closely related to the utopian writings. An opposite to utopia would be *anti-utopia*, depicting an entirely flawed society, but as a literary genre, dystopias operate between these historical antinomies of utopia and anti-utopia. True, dystopias offer the worst possible future scenarios, but as dystopia theorist Tom Moylan (2000, 147) reminds, they oftentimes affiliate with a utopian tendency to maintain a horizon of hope: at least there is a possibility to resist and change the unwanted trends and practices. Dystopias are therefore often conceptualized as a dark version of utopian writing.

The prototypical dystopian narrative is a novel that begins *in medias res*, within a nightmarish society, which is introduced to the reader through the focalization of a protagonist. Classic dystopias like George Orwell's *Nineteen Eighty-Four* (1949) and Aldous Huxley's *Brave New World* (1932) construct their plot around the counternarrative of resistance; a suffering and alienated individual or a group of individuals rebels against the system (Moylan and Baccolini 2003, 5). In the contemporary culture, however, there are various dystopian subgenres and genre hybrids. Today, dystopia covers not just literature but all narrative arts – especially forms of popular culture, such as movies, TV-series, and comics.

Utopias and Dystopias

Despite its gloomy appearance, dystopia is closely connected to *utopia*, an ancient literary genre that imagines perfect and desirable societies (Suvin 1990). Both genres envisage possibilities for the contemporary world order: how to organize the

human world for better or worse. The term utopia is a derivative from ancient Greek, the literal translation being no-place (ou=not, topos = place), and it was first used by Thomas More in his famous *Utopia* (1516). The term ironically reminds the reader of the unreachable nature of a perfect society in the unperfect reality. However, the term carries a double meaning: not only Greek word *ou* (general negative) but also *eu* (good, ideal). (Manuel and Manuel 1979, 1). Eutopia is a term that many utopian theorists still use to discuss literary utopias (see Moylan and Baccolini 2003, 5), but terminology depends on the choice of the scholars. The word dystopia, in turn, is a neologism derived from Greek: *dis topos* – bad place. The term was first used much later than utopia, presumably by John Stuart Mill in his speech in front of the British Parliament in 1868 (Milner 2009, 827).

The historical gap between the two terms is noteworthy. The oldest utopian text is often considered to be Plato's *Republic* (c. 375 BC), which introduces an ideal society governed by philosopher-kings. The first modern utopia is More's *Utopia*, which gained many imitators regularizing a new genre in the sixteenth and seventeenth centuries: utopian fiction (Manuel and Manuel 1979, 1–2). Literary dystopias for their part were quite rare until the end of the nineteenth century. In the family of utopian texts, dystopia is a newcomer.

One obvious problem is how to classify utopian texts as dystopias or utopias. The simple answer is that utopias depict a world that is better than the actual world, and dystopias a world that is worse. Using this sharp distinction in practice is much more difficult than it sounds. Sometimes the works of fiction seem to change their generic compartment as time passes. Most obviously this can be seen with the old utopian fiction like Plato's *Republic* or Thomas More's *Utopia*. From the contemporary perspective, the ideal societies presented in these works appear to be antidemocratic and totalitarian – almost dystopian societies. Evidently, one can find dystopian echoes in utopias.

Vice versa, dystopias contain utopian undertones as mentioned above. Dystopian narratives even thematize utopian thinking frequently and show how easily every utopia is in constant danger of becoming a dystopia. In Margaret

Atwood's famous dystopian novel, *The Handmaid's Tale* (1985), the near-future United States has turned into a Republic of Gilead, theonomic and strictly patriarchal society, that brutally violates women's basic human rights in the name of religion. In the ethos of the text, the narrative's moral stance is obvious. The protagonist and the narrator of the novel, Offred, belongs to the suffering group of women who are forced to produce children for the ruling class. However, it is also evident that the new social order benefits some, and especially higher status men. Like the commander in the novel famously declares: "Better never means better for everyone (--) it always means worse for some" (Atwood 2010/1985, 224). Dystopias often balance between the two extremes, utopia and anti-utopia, and reminds us of the dangers of arrant utopias (Laakso 2020, 86; Moylan 2000, xiii.) As Ralf Dahrendorf (1958, 116) has noted, common structural characteristics of utopias are their uniformity and therefore also the dangerous absence of disagreement and conflict.

Utopian theorist Darko Suvin has claimed that "strictly and precisely speaking, utopia is not a genre but the sociopolitical subgenre of science fiction" (Suvin 2016 (1979), 76). The sociopolitical aspect of utopianism is easy to agree with, but it is common to see the term utopia used far outside on discussion of any kind of fiction. Lyman Tower Sargent treats utopianism as a form of *social dreaming* (1994, 1–3), "the dreams and nightmares that concern the ways in which groups of people arrange their lives and which usually envision a radically different society than the one in which the dreamer lives." Broadly understood, utopia diverges from literature to mean any future-oriented thinking that imagines possible world orders that differ from our own.

Dystopia, however, still most commonly refers to narratives that imagine dark and unwanted possible futures. Today, dystopia is one of the most popular genres in literature as well as in audiovisual popular culture. In comparison to the literary (or narrative) genre of utopia, the power relations between utopia and dystopia have radically changed starting from the twentieth century. Nowadays, rarely any published fiction belongs to the genre of utopia in the sense of depicting a good

place or society. Instead, novels, movies, video games, and TV-series are full of visions of pandemics, deprivation, exploitation, hunger, wars, horrifying technologies, and ecological catastrophes. Many hugely popular contemporary book and film series like *The Lord of the Rings*, *The Hunger Games*, and *Star Wars* have used dystopian conventions and made the story type of worsening societies and rebellion familiar to wide audiences (Isomaa, Korpua & Teittinen, xvi).

When considering the growing popularity of dystopias in the contemporary culture, one might wonder why dystopias are such an important part of our collective imagination. Why do we want to consume narratives on the possible destruction, devastation, or even the world's end waiting right behind the corner? The explanation to the growing popularity of dystopias is obviously complicated. One potential interpretation is that in a world facing the challenges of the climate change, the zeitgeist is inevitably dystopic, and hopeless future possibilities seem credible.

The other explanation lies in the taste of reading and watching of the contemporary audiences. Fredric Jameson has pointed out in his *The Seeds of Time* (1994, 55–56) that dystopias have a narrative, whereas utopias are mostly nonnarrative. Utopian societies are stable and need not to be resisted. If everything is fine, nothing must be changed. Dystopian societies, however, offer pleasurable challenges for the plot. Like Baccolini and Moylan (2003, 6) summarize: “Paradoxically, dystopias reach toward (–) the non-narrative quality of Utopia precisely by facilitating pleasurable and provocative reading experiences derived from conflicts that develop in the discrete elements of plot and character.” Dystopian narratives are highly tellable and therefore entertaining, touching, and approachable (Laakso 2020, 83). Classic dystopias like Orwell’s *Nineteen Eighty-Four* or Huxley’s *Brave New World* were hardly intended primarily to entertain, but regardless of their serious themes, they are exciting and emotionally addictive narratives (Isomaa et al. 2020, xvi; Baxter et al. 2014, 7–10). Contemporary dystopias offer not only fearful visions of the possible futures but also enjoyable experiences for the consumers hungry for an adventure. This partially

explains the ongoing dystopian boom in the contemporary culture.

Possible Worlds of Dystopian Fiction

Dystopia is a literary genre that portrays fictional worlds that are “worse than the ones we live in,” as Rafaella Baccolini and Tom Moylan excellently summarize in their introduction to *Dark Horizons* (Moylan and Baccolini 2003, 1). Today, however, this clear-cut definition raises questions. We live in the middle of climate change, and many other recent developments have brought dystopic worlds close to our own (see Isomaa, Korpua & Teittinen, x–xi). Who defines whether a fictional world is better than the reality we inhabit? How should the worlds of dystopian fiction be seen in relation to the actual world?

Worldliness is an essential dimension of any narrative. Narratives produce a *storyworld* or *fictional world* (the former contains also nonfictional narratives, the latter just fictional ones). Narrative theorist David Herman (2009, 106) defines a storyworld as “global mental representations enabling interpreters to frame inferences about situations, characters, and occurrences either explicitly mentioned or implied by a narrative text or discourse.” Worlds created in fiction are never ontologically complete, since they are just linguistic compositions (see Ryan 2019a, 74). The reader takes a few hints of the narrative text and constructs the full, vivid, and complete worlds based on her knowledge of the actual world. When we read Orwell’s *Nineteen Eighty-Four*, we assume that the world surrounding the protagonist Winston Smith and his struggle against the oppressive system is a complete world even though many details of this world and its inhabitants are delineated out of what is narrated. In a way, while reading fiction, we are all authors who imagine and create fictional worlds around the supporting structure of the text.

One workable approach to the worlds of dystopian fiction is the *Possible worlds theory*. Originally, the philosophical concept of *possible worlds* was adapted to literary studies starting in the middle of 1970s. The Possible worlds theory’s main idea is that a reality is a universe composed

of a plurality of distinct worlds. A central element in this universe is “actual” or “real” world, surrounded by “non-actual” or “possible” worlds. In the literary theory – or in a broader sense in theory of narratives – these possible worlds are fictional worlds created by fictions (Ryan 2019b, paragraph 1–3). In this sense, imaginary worlds of dystopian fiction like Orwell’s *Nineteen Eighty-Four* or Atwood’s *The Handmaids Tale* can be approached as possible worlds – alternatives to the actual world of the author and the reader. These worlds, however, should not be understood as “pseudo-objects on the page,” as utopian theorist Darko Suvin (1990, 76) reminds, but rather they exist “as a gamut of Possible Worlds in the imagination of the readers.”

The problem with the theory of Possible worlds applied to the dystopian fiction is the question of what lies behind the horizon of the possible. Two of the most influential narrative theorists of the possible worlds Marie-Laure Ryan and Alice Bell (2019, 5) have asked, are there also *impossible worlds* and if so, what are they in literature? Possibility is often associated with the laws of logic, but this is an unsatisfying answer in the case of fictional texts. In fictional worlds, anything is possible, and the real-world logic can always be stretched. As Ryan (2019a, 65–67) notes, an impossible possible world is an oxymoron. Instead, the possibility or impossibility of the fictional possible world should be analyzed with the concept of *distance*.

Distance as a notion obliges a point of reference. Possible fictional worlds are always opposed to the actual world we inhabit and where we gain our knowledge of the reality. As Ryan (2019a, 65) suggests, the distance between our world and storyworlds can be measured by certain (onto)logical rules that these worlds share. We should ask, how many rules describing the actual world are violated in fictional worlds?

The distance allowed or assumed by reader depends on the genre. In the case of children’s fairytales, we accept the possibility of magic, talking animals and other wondrous features. In the case of dystopian fiction, we typically expect a larger amount of realism. Genre features of dystopian fiction extend the distance of the actual world from the fictional world, concerning

societal issues like the form of the government, conditions of social justice, or freedom of speech. Many a time in dystopian fiction, the possible is not liberated from the rules and state of affairs of the actual world. The implicit genre agreement between the piece of dystopian fiction and its reader is that the depicted possible world is a dark future portrait of the actual world. Of course, exceptions exist. Contemporary dystopias are often genre hybrids between fantasy and dystopia or even fairytale and dystopia. In these cases, the idea of the possible worlds allows violation of logical rules of the actual world.

When considering possible worlds of dystopian fiction, *comparison* is always an inevitable part of the meaning making in the reader’s reading process. The comparison occurs between the actual world and the possible fictional world. In his theorizations on possible worlds of utopian and dystopian fiction, Mattison Schuknecht (2019, 236–237) uses the term *reference world*, a world that the alternative possible worlds encircle. Dystopian (as well as utopian) narratives are generically determined to be read by comparing and evaluating the actual world and the possible fictional world.

Conclusion

Dystopian fiction asks what may become of the world considering its present state, history, and ongoing evolutions. Most of the dystopian fictions are located in the future, but they might also be placed in the past or in the present. Often the temporality of the dystopian novel is not explicit and is intentionally left for the reader to decide. Sometimes the temporal state of certain dystopian fiction in relation to the readers’ present also changes. This has happened to the Orwell’s *Nineteen Eighty-Four* placed in the year 1984 as the title suggests. The year 1984 came and went and did not look quite like Orwell’s vision, yet even today, this dystopian classic is read as a possible future of humankind. Even though dystopian fiction often seizes current societal themes, dystopian narratives serve their mirroring function also for the readers who cannot relate to the temporal moment when a particular dystopia has been

written. Huxley, Orwell, and Atwood all wrote their dystopias as a critique of a sociopolitical situation that differs a great deal from the contemporary one. These narratives dating back several decades are still read, discussed, and used as reference points to evaluate ongoing processes. They still offer readers tools for reflecting the current political situation. The possibility of the dystopian fiction therefore seems to be built in a dynamic interpretation process into which the dystopian fiction invites its reader.

One way to understand the genre of dystopia is to treat it as a warning tale for adults. One often used metaphor for dystopia is a canary in the cage referring to how canaries were (ab)used in coal mines. When the canary dies, the oxygen level is dangerously low, and miners should save themselves. Dystopias can work as canaries, but still they are not detailed predictions of the future. Dystopian fiction can predict the future by imagining the ongoing tendencies, exploring things already happened or inventing something not yet existing. Yet dystopias are not simply warnings or predictions, but exciting and enchanting works of fiction that explore the possibilities we do not want to experience.

Cross-References

- [Creating the Future](#)
- [Fiction](#)
- [Hope](#)
- [Imagination](#)
- [Social Change](#)
- [Thought Experiments](#)
- [Utopia](#)

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E

Ecstasy

► [State of Consciousness](#)

Emergence

Mariusz Tabaczek
Pontifical University of Saint Thomas Aquinas,
Rome, Italy
Thomistic Institute, Warsaw, Poland

Keywords

Constraints · Complexity · Downward causation · Formal and final causation · Epistemological (weak) emergence · Irreducibility · Levels of organization · Ontological (strong) emergence · Nonreductionist physicalism · Supervenience · Teleology

Definition

Emergence (EM) denotes a wide variety of phenomena – studied by numerous disciplines in natural and human sciences – where new processes, interactions, entities, and properties are claimed to be observed, characteristic for higher levels of complexity of matter and irreducible to their lower-level constituents. Playing central role in systems theory and theories of integrative levels, emergentism aspires to become one of the important categories within scientific explanation as it is understood today. As such, it departs from both strict holism and reductionism. Whereas the former assumes that we cannot infer anything concerning higher-level phenomena from the analysis of their parts, the latter argues there is nothing new about wholes, which would not already be present in their parts. Forging a middle ground between these two extreme positions, the term and the theory of EM designate the all-encompassing range of potentialities (possibilities) and dispositions of matter and its probable arrangements, which effect qualitative and irreducible originality and novelty of complex processes, entities, and properties, observed in nature. Despite its immense popularity as a conceptual tool, EM raises some challenges and objections. Because it is difficult to prove irreducibility, there is no agreement as to whether, in its basic assumptions, EM should be regarded as merely epistemological or ontological. Moreover, concerning ontological EM, there have been

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several competing attempts at defining its main objectives.

Introduction

“Emergence” became a notorious philosophical term of art, appropriated by specialists in various scientific disciplines, as well as by nonspecialists in folk imagery and in common speech, where – moving in our mind’s eye among views at different scales – we realize and acknowledge that “more is different” (Anderson 1972). From bacteria forming a bi-directional vortex in a drop of water to vehicles forming traffic flow in modern cities, we discover new layers and strata of possible organizations of matter and of spontaneously arising structure and order. Mesmerized and mystified by the beauty of emergents, we nonetheless critically ask whether their irreducibility is a brute ontological fact, or rather simply the function of natural limitations in our scientific and analytic possibilities, knowledge, and understanding.

After a short historical introduction, this entry will provide a scientific definition and the classification of emergents, followed by the philosophical description of their basic characteristics. Next, it will discuss various species of EM – which shall reveal the difficulty of the critical analysis of spontaneous complex realizations of possibilities (potentialities) hidden in the reality of the universe we live in.

History of Emergence

The term “emergence” derives from Medieval Latin *emergere* = rise out or up, bring forth, bring to light (e.g., from a liquid by virtue of buoyancy), which is opposite to Latin *mergere* = to dip, or to sink. It was also used in late Middle French as *émergence*, originating from the verb *émerger*. But the origin of the EM theory goes back to Aristotle, who famously spoke about “things which have several parts and in which the totality is not, as it were, a mere heap, but the whole is something besides the parts [i.e., it is something more than the sum of its parts]” (*Metaphysics* VIII, 6 [1045a 8–10]).

The modern version of EM theory originated from the late nineteenth-century British empiricism. Witnessing impressive advances in chemistry and biology at the time, John Stuart Mill (1846) and George Henry Lewes (1875) realized that some of the reductionist explanatory bridges between these sciences and physics became untenable. They examined philosophical aspects of the “compositions of causes” and transition laws in cases investigated by chemistry and biology, emphasizing that some laws and causal explanations of higher phenomena are irreducible. Following this analysis, Lewes introduced, for the first time – in both scientific and philosophical contexts – the concepts of “emergent effects” and “emergents” (Lewes 1875, 412).

As the struggle between reductionism and the growing skepticism about its validity in special sciences (beyond physics) continued, emergentism was reinvigorated once again at the beginning of the twentieth century. This time, it was proposed in a more specific context of philosophical issues arising in biology, as a middle ground between the extremes of vitalism and mechanistic reductionism. Its major proponents were Samuel Alexander (1920), Conwy Lloyd Morgan (1923), and Charlie Dunbar Broad (1925). Although the theory they offered seemed to show the hallmarks of a valid and intriguing proposition, it came to be seriously questioned and radically rejected by the antiphilosophically and antimetaphysically oriented agenda of logical positivism and thinkers who stood at the origins of the analytic tradition in philosophy.

The most recent revival of emergentism came with the critical evaluation of the program of logical empiricism in the second half of the last century, accompanied by a new appreciation for metaphysics, originating from the conversation carried on by David Lewis (1969) and David Armstrong (1978), which was later joined by Saul Kripke (1980) and Willard Quine (1981), and the reinvigorated mind/brain debate, inspired by Karl Raimund Popper (1977), Mario Bunge (1980), John Jamieson Carswell Smart (1981), Roger Wolcott Sperry (1986), and Jaegwon Kim (1998). The conversation on irreducibility and EM they started was adapted in numerous scientific disciplines that introduce integrative levels and

systemic approach to the reality, such as chemistry, biology, psychology, or social sciences.

Emergents

Scientifically speaking, emergent processes, interactions, entities, and properties are defined in terms of an “unprecedented global regularity generated within a composite system by virtue of the higher-order consequences of the interactions of composite parts” (Deacon 2006, 122). They are characterized by the broken symmetry, i.e., the fact that the regularity present on underlying lower levels of complexity of matter is not present on higher levels of complexity, due to phase transitions, which bring novel types of regularity and order. This does not make the lower-order interactions irrelevant, but simply tells us that their effects, observable in higher-order phenomena, have been renormalized (Laughlin 2005, 44–45). This description can be regarded as a more articulate and precise contemporary expression of Aristotle’s observation that the whole is greater than the sum of its parts. See an example in Video 1.

First-Order Emergents

Emergents are traced in many natural phenomena (Morowitz 2002; Paolini Paoletti and Orilia 2017a), which oftentimes are classified on the three-order scale of growing complexity (Deacon 2012). Among the first-order emergents, a set of fundamental physical and chemical phenomena is usually brought to our attention, including mass, space and time (which are thought to be arising from Higgs bosons or strings), surface tension, friction, viscosity, elasticity, tensile strength, temperature, conductivity, chemical bonds, structures and chirality of macromolecules, etc. (McGivern and Rueger 2010). Many of them result from basic characteristics and patterns of behavior typical of molecules or other building blocks of entities and substances when taken in bulks (conglomerates).

Second-Order Emergents

Another set of examples of naturally occurring phenomena which both fascinate and puzzle human

observers are (a) natural geometric patterns that develop through the interactions of shapes played out sequentially over time and (b) self-organizing (dissipative) systems. The former group includes polygonal and circular ground patterns, alternating stripes of stones and vegetation, water erosion formations, and so on (see Fig. 1). Among the latter we find examples of water crystals forming on glass, formation of snowflakes, eddies forming in bodies of water, or convection cells (e.g., Bénard cells forming in heated liquids). These are all examples of the second-order emergent phenomena occurring in nature and investigated by specialized subdisciplines of chemistry and physics.

Third-Order Emergents

Finally, scientists distinguish third-order emergent phenomena as resulting from interactions sensitive to shape and time that show heritable and teleological features. As examples we can list feedback control systems, homeostatic processes, the origin and organization of life (from subatomic level to the entire biosphere), and various cases of swarm behavior (ant and bee colonies, migrating insects, schooling fish, flocking birds, etc.).

Still Higher Orders of Emergents

However, the science of EM does not stop on this standard three-order classification of emergent phenomena. Going back to the bottom level of complexity, the physics of quantum mechanics seems to suggest that quantum entanglement and our perception of a deterministic reality – in which objects have definite qualitative features, positions, momenta, and so forth – are both emergent phenomena, grounded in the true state of matter described by a wave function, which does not allow us to assign to elementary particles definite positions or momenta. A similar situation obtains with the laws of physics as we know them today. It is believed that they all emerged from one fundamental law, which is yet to be found by science. Moving up on the scale of complexity, one may argue that the laws of chemistry emerged from those of physics and gave the origin to the laws of biology (including evolution). The laws of biology provided, in



Emergence, Fig. 1 Circles of stones (Svalbard Archipelago in Norway) – an example of emergent phenomenon occurring in nature (Hannes Grobe, “Permafrost Stone-

Rings,” Wikipedia, August 31, 2007, https://en.wikipedia.org/wiki/File:Permafrost_stone-rings_hg.jpg).

turn, a necessary foundation for the EM of the laws related to human mind, consciousness, mental states, qualitative feels, conceptual representations, rationality, and language – the object of study in psychology, social sciences, and linguistics.

Acceptance of this argument opens a way to consider as emergent a number of other familiar phenomena, such as spontaneous organizational tendencies characterizing groups of people, economic trends and the stock market, architectural and traffic patterns of modern cities, the World Wide Web, patterns of Internet traffic (including patterns in the social media), and so on. These are all examples of decentralized complex occurrences exhibiting higher-order irreducible emergent properties.

Basic Characteristics of Emergence

There have been many attempts at defining fundamental doctrines and philosophical commitments of EM theory (e.g., Kim 2006; Clayton 2004; Peterson 2006; Humphreys 2016). Their comprehensive list involves at least eight central aspects.

Nonadditivity of Causes

The first formulation of EM came with Mill’s distinction of the physical (based on mechanics) composition of causes – referring to the vector or algebraic addition – from the chemical mode of combined action of causes. Because products of chemical reactions are not simply algebraic sums of the effects of each reactant, Mill suggested

calling them “heteropathic effects.” He distinguished them from “homopathic effects” applicable in physical mechanics (Mill 1846, 212). If this is the case in cause-effect interactions in chemistry, concluded Mill, then the causal effects distinctive for living systems must be nondeducible from those characteristic of their chemical ingredients all the more. Lewes, who used a slightly different terminology of “resultant” and “emergent” effects, distinguished the latter as incommensurable and irreducible to the sum of their components.

Novelty of Emergent Processes, Entities, and Properties

An acknowledgment of the reality of heteropathic/emergent effects leads to an attempt to define the ontological nature of emergents more precisely. The three most popular ontological categories mentioned in this context are (1) emergent processes (events), (2) emergent entities (substances), and (3) emergent properties (qualities).

Ontological Monism and Qualitative Difference: Nonreductionist Physicalism

Contemporary emergentists seem to accept ontological monism, saying that “all individuals are constituted by, or identical to, micro-physical individuals, and all properties are realized by, or identical to, micro-physical properties” (Gillett 2003, 28). At the same time, they emphasize the novelty and qualitative difference of emergent properties, which cannot be instantiated simply by quantitative accumulation of the basic constituents of material entities and/or their properties. Their position is oftentimes classified as a non-reductionist version of physicalism.

Emergence and Mereology

Understood in terms of the qualitative novelty of emergents, which, nonetheless, are realized by the most basic material constituents, the theory of EM classifies as mereological. Its main objectives are built around structural and dynamical dependencies between the wholes and their parts. What is being emphasized by the proponents of EM is both the necessity and insufficiency of parts for

the existence of the whole. The claim of necessity strives to protect the emergentist position from dualism, while the claim of insufficiency contrasts it with reductionism.

Levels of Organization

The fact that EM is grounded in ontological monism and mereology requires from it a theory and language describing the hierarchy of various stages of organization of the constituent parts of emergents. The language of levels of organization was first introduced by Alexander in the second volume of his *Space, Time and Deity*, where he says: “The higher-quality emerges from the lower level of existence and has its roots therein, but it emerges therefrom, and it does not belong to that lower level, but constitutes [in] its possessor a new order of exist[ence] with its special laws of behavior” (Alexander 1920, 2:46). More recently, a group of researchers led by Claus Emmeche proposed a more thorough ontological specification and classification of levels of complexity, emphasizing their physical interdependence and metaphysical “inclusivity” (Emmeche et al. 1997).

Emergent Laws

Another characteristic feature of emergent phenomena is that their scientific description leads to the discovery of new laws of nature, unique and specific for higher levels of complexity. Acknowledging this fact, Mill – contrasting homopathic and heteropathic effects – concludes that the latter are governed by new, heteropathic laws. Alexander speaks about new laws ruling the emergents, whereas Broad analyzes emergents in terms of “trans-ordinal laws,” which he defines as laws connecting “the properties of aggregates of adjacent orders” and which he differentiates from “intra-ordinal laws” connecting the properties of aggregates of the same order (Broad 1925, 77–78). Clearly, the status of the laws of nature is widely debated in the philosophy of science (see Carroll 2016). Many do not assign to them an ontological character of any kind and see them as descriptive rather than prescriptive. But even if they simply describe the results and effects of the activity of emergent entities and dynamical

systems, they are real features of the world and thus might be considered as important indicators of EM.

Nondeducibility, Nonpredictability, and Irreducibility of Emergents

Taking into account all aspects of EM discussed so far, it becomes apparent that it can be further characterized in terms of another three essential characteristics, i.e., nondeducibility, nonpredictability, and irreducibility of emergent entities, properties, and laws.

First, deducibility – understood as deriving a conclusion from something already known – is not applicable to emergents. For emergents – for instance, emergent laws – are brute nomological and nonderivative facts which, according to Broad, must “simply be swallowed whole with that philosophical jam which Professor Alexander calls ‘natural piety’” (Broad 1925, 55).

Second, predictability – defined as envisaging future states of affairs – is also impossible in case of emergents. It is true not only because the occurrence of hierarchical levels or layers and relations between them depend on the fundamental indeterminism of the physical universe. The ontological nature of emergents is such that, even if we are able to form emergent laws inductively, we are not able to make the same kind of prediction about the EM of a possible new property of the already known kind theoretically.

Third, emergents are resistant to reduction, which Ernest Nagel defines in terms of a situation in which “the experimental laws of the secondary science (and if it has an adequate theory, its theory as well) are shown to be the logical consequences of the theoretical assumptions (inclusive of the coordinating definitions) of the primary science” (Nagel 1961, 352). He claims reduction covers both homogenous cases (simple and direct intertheoretical reduction) and non-homogenous cases (more complex and indirect reduction that introduces a middle step engaging bridge laws). It is being said that the scientific account of emergents resists both versions of Nagel’s reductionist program and Kim’s suggestion that emergent properties are reducible when they can be functionalized, i.e., construed or reconstrued by their causal/nomic relations to lower-level

properties of a given dynamic system S (see Kim 1999, 9–18, Humphreys 2016, 197).

Emergence and Downward Causation

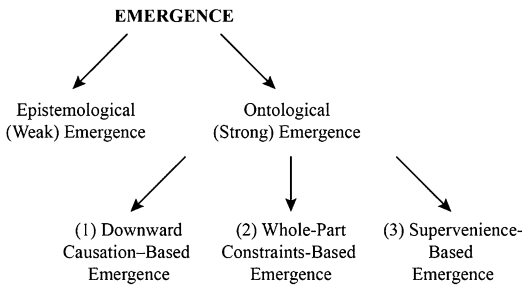
The irreducibility of emergents is usually related to their causal contribution to ongoing processes of the world. Indeed, many treat the question concerning what emergents can actually “do” after having emerged as pivotal for the whole theory of EM. For without having causal powers, emergent properties would simply turn out to be epiphenomenal and, as Alexander says, “undoubtedly would in time be abolished” (Alexander 1920, 2:8). Consequently, the final characteristic of EM, and as it turns the one of an ultimate importance, must be that “Emergent properties have causal powers of their own—novel causal powers irreducible to the causal powers of their basal constituents” (Kim 1999, 22).

These novel causal powers are usually given the name “downward causation” (DC) (some philosophers refer to downward- or macrodetermination). Unlike upward causation (an instantiation of a higher-level property by a lower-level property) and same-level causation, DC occurs when an emergent higher-level property causes (has an influence on) the instantiation of a lower-level property (Campbell 1974, 180). An example of DC that is often brought and hotly debated in most recent philosophy of mind is the causal influence of mind on the brain – out of which it emerges – and on the activities of the entire human organism.

The power of the concept of DC lies in it providing an answer to the apparent insufficiency of the compositional explanation of complex higher-level entities encountered in nature and investigated by natural sciences. At the same time, however, DC triggers a detailed and nuanced philosophical analysis and debate, related to the one concerning types (species) of EM (see Paolini Paoletti and Orilia 2017a; Tabaczek 2019).

Species of Emergence

Although the list of basic characteristics of EM speaks in favor of the clarity and the metaphysical sharpness of the theory, the truth is that EM is not, in fact, an unambiguous term. Quite contrary,



Emergence, Fig. 2 Types of emergence

studied and analyzed from different perspectives, within different subdisciplines of science and philosophy, and in reference to a variety of phenomena on different levels of complexity, EM becomes, in a way, a term of family resemblance. One of the most basic distinctions within the theory itself classifies certain phenomena as ontologically emergent while other phenomena as irreducible and emergent merely epistemologically. Moreover, it turns out that the ontological novelty of emergents can be defined in several different ways. Hence, a classification of various types of EM may be offered, as depicted in Fig. 2 (see Chalmers 2006; Peterson 2006).

Epistemological and Ontological Emergence

The crucial distinction that needs to be mentioned is the one between the epistemological (weak) and the ontological (strong) versions of EM. The former, weak type of EM, is perceived as an outcome of natural limitations in human analytic possibilities, knowledge, and understanding. Because these limitations are not unsurpassable, we can expect that, with the development of our cognitive skills and research methods, what today classifies as irreducible and emergent (and corresponds with the list of basic characteristics of EM discussed above) will find reductionist explanation in the future. This kind of EM is differentiated from strong EM, which assumes that emergent phenomena belong to the fabric of the universe and are thus intrinsically irreducible. The ontological version of EM, however, requires a more precise specification of the metaphysical and ontological novelty of emergents, which may put it in conflict with physical monism and physical causal closure.

The literature on EM offers at least three ways of defining ontological novelty of emergents.

Downward Causation-Based Ontological Emergence

The first (1) and most popular way of defending ontological novelty of emergents refers to the concept of downward (top-down) causation. Its advocates find it decisive for the formulation of the general rule concerning qualitative difference of emergents from their basal constituents. They argue that despite emergents' physically monistic foundations, due to the novel and irreducible character of DC, emergents remain free from the charge of epiphenomenalism and resist reductionist programs in science and philosophy of science.

However, downward causation-based EM faces the difficulty of specifying both causal relata and the very nature of causation in question (Hulswit 2006; Tabaczek 2019). Its supporters face a critical dilemma, namely, the struggle between supporting the rule of physical causal closure and acknowledging the novelty and irreducibility of DC. The former presupposition, referred to as the causal inheritance principle, states that causal powers on higher levels of complexity are always a "product" of the causal powers of the basal properties on lower levels of complexity and thus must belong to the same ontological category. The latter argument in favor of the ontological novelty of DC seems to suggest the opposite. This dilemma is closely related to the struggle of reconciling ontological monism and the qualitative difference of emergents (see the third characteristic feature of EM listed above). It was probably best expressed by Kim's famous argument from causal exclusion (Kim 1999, 31–33), in which he shows – on the example of mental causation arising from neural patterns – that the argument in favor of DC involves causal overdetermination, i.e., the same mental state is caused by both lower-level neural patterns and DC. He claims the latter must be excluded, which consequently makes the whole project of EM fall into physicalism.

Kim's argument triggered a hot debate which still continues within the circles of philosophy of mind and philosophy of science (see an overview of this debate in Paolini Paoletti and Orilia 2017b;

Tabaczek 2019, 78–91). One of the important arguments defending irreducibility of DC suggests it should be redefined in terms of Aristotle’s plural typology of causes, especially in reference to his notion of formal and final causes (teleology) (Emmeche et al. 2000; Silberstein 2006; Moreno and Umerez 2000). An attempt at realizing this postulate, in the context of both the classical and the contemporary neo-Aristotelian metaphysics, was offered in Tabaczek 2019 (247–270).

Whole-Part Constraints-Based Ontological Emergence

The other two, alternative ways of defending ontological novelty and irreducibility of emergents concentrate, respectively, (2) on the idea of natural systems’ growing complexity due to external constraints and (3) on the theory of supervenience (SUP). The constraints considered in (2) can be defined either (2a) non-causally (Gillett 2003, 42, Juarrero 1999, 132–133, Campbell 2015) or (2b) causally, i.e., in terms of “causation of absences” (Deacon 2006, 143, Deacon 2012, 194–195). In both cases “emergent properties are not something added, but rather a reflection of something restricted and hidden via ascent in scale due to constraints propagated from lower-level dynamical processes” (Deacon 2012, 203) – which protects the theory of EM from the charge of causal overdetermination. What rises questions in whole-part constraints-based ontological EM is the ontological status of constraints in (2a) and the nature of causation attributed to them in (2b) (see Tabaczek 2019, 120–125).

Supervenience-Based Ontological Emergence

Concerning (3), SUP – which provides one of the most popular explanations of mind/brain dependency – is defined in terms of simple covariance between two types of properties: “A set of properties *A* supervenes upon another set *B* just in case no two things can differ with respect to *A*-properties without also differing with respect to their *B*-properties. In slogan form, “there cannot be an *A*-difference without a *B*-difference” (McLaughlin and Bennett 2014).

However, when analyzed within the context of emergentism, SUP is said to entail not only metaphysically neutral covariance between physical and emergent but also their nonidentity, dependence, and

directionality, all three having an ontological dimension. If this is the case – the argument continues – SUP becomes a possible metaphysical foundation for ontological EM. Without introducing physically novel entities and causes (DC), the fact of non-identity, dependence, and directionality of supervenient properties on their subvenient basal property counterparts suffices to build upon it a SUP-based theory of ontological EM.

Challenging this proposition, a number of emergentists emphasize a radical difference between SUP and EM, which puts in question the plausibility of the SUP-based version of ontological EM. Humphreys suggests that SUP is acceptable merely as a consistency condition, enabling attribution of concepts concerning properties characteristic for different levels of complexity, whereas EM provides an explanation of ontological relationships between them (Humphreys 1997). Kim says the question of what must be added to covariation to yield dependence remains an interesting and deep metaphysical query for which there is no easy answer (Kim 1990).

Conclusion

These somewhat technical distinctions and conversations concerning characteristics and species of EM are not trivial. For while we are fascinated with the remarkable beauty and paradoxical regularity and simplicity of emergent processes, entities, and properties – originating within higher orders (levels) of complexity of matter (oftentimes out of chaotic behavior of its basic constituents) – we realize that understanding and harnessing the fundamental organizing principles, as well as the theoretical basis of emergents, remains one of the grand challenges of the joint effort of natural science and philosophy.

The question of whether there are any instances of ontological EM remains controversial. Some metaphysicians and philosophers of mind – based on first-person, introspective grounds – contend that consciousness, intentionality (free will), and human agency are ontologically emergent (Hasker 1999; O’Connor 2000). Various authorities in natural sciences such as the Nobel laureate chemist Ilya Prigogine and, more recently, Nobel laureate

in physics Robert B. Laughlin claim that, respectively, “the dissipative structures of non-equilibrium thermodynamics” and properties of certain kinds of macroscopic matter such as crystalline states, which are insensitive to their microscopic constituents, classify as cases of ontological EM (Nicolis and Prigogine 1977; Laughlin and Pines 2000). However, many other scientists and philosophers dismiss such claims and declare that if EM is real, it is merely epistemological. The research and discussion concerning the nature and the metaphysical status of EM continues.

Nevertheless, no matter what the final conclusion in this debate will be (assuming it is possible to reach one), EM theory as such is rightly considered as one of the major conceptual tools in our attempts to understand and define both the origin and the actualization of new potentialities and possibilities. For those who interpret emergents ontologically – especially within the context of the classical and neo-Aristotelian philosophy – the notion of EM helps to discover, describe, and classify the vastness of the scope, depth, and fecundity of potentialities inherent in the universe we live in. They see possibilities characterizing more basic levels of organization of matter as being actualized on qualitatively different, higher (emergent) levels of organization, whose nature reveals, in turn, new ranges of possibilities that may come into realization within still higher orders of both physically and metaphysically conceived complexity. According to them, this nested hierarchy of interdependent and complementary orders of potentiality (possibility) and actuality grounds ontologically all entities and phenomena observable in the universe. Even those who find EM as a merely epistemological category do acknowledge its importance as a source of an intellectual inspiration and incentive to analyze the reality across the scales and orders of magnitude and quantity of objects that constitute it.

Cross-References

- Complexity
- Consciousness
- Determinism

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Emergentism

Gil Santos

Departamento de História e Filosofia das Ciências
and Centro de Filosofia das Ciências da
Universidade de Lisboa, Faculdade de Ciências,
Universidade de Lisboa, Lisboa, Portugal

Abstract

Emergentism is the view that there are certain real-world entities necessarily generated from and constituted by other entities but not fully reducible to them ontologically and/or epistemically. Emergence is thus a relation in which an entity (the “emergent”) is partially dependent on and partially independent of the entities with respect to which it is said to be emergent (the “emergence base”). The emergence bases provide the necessary but not sufficient conditions for the emergents’ existence or identity. Ontological emergence occurs when some real-world entity, such as an object, process, property, causal power, or law, is

not fully (pre)determined or generated by its respective base entities. Epistemological emergence occurs when some real-world entity cannot be represented, predicted from, or explained by concepts, theories, law-statements, or models referring to its respective base entities. The emergence relation can be further conceived diachronically, as a process, and synchronically, as a distinctive ontic status. In the first case, emergence refers to the relation between a newly formed entity and its original emergence base, or to the relative independence of certain macro-properties of a system relative to many changes in its parts' properties. In the second case, emergence refers to the emergent status of a system in virtue of its qualitative difference and relative causal autonomy, at any time of its development, vis-à-vis the properties and causal profiles of its contemporary parts. Finally, some emergentists also claim that ontologically emergent systems causally affect, constrain, control, or condition their own parts' identities or behaviors.

Keywords

Emergence · Reduction · Explanation · Micro-determinism · Predeterminism · Downward causation · Causal powers · Possibility

History

Emergentism was born in the attempt to answer the following question: How can we make sense of the generation of new real-world entities instantiating new and somehow irreducible properties, causal powers or laws, while assuming the fundamental unity of the world and the causally continuous process of its evolution?

With the goal of overcoming both reductive physicalisms and non-naturalistic ontological pluralisms, the term “emergence” was first used by a group of British philosophers in the late nineteenth century. According to reductive physicalism, any entity either belongs to the fundamental physical level of reality or is completely reducible to it, as a mere epiphenomenal by-product. According to non-naturalistic pluralism, all levels

of reality (matter, life, mind, etc.) are to be taken as equally real, but the higher levels' existence can only be fully explained by appealing to extra-natural principles, substances or forces, such as souls, *entelecheia*, *élans vitaux*, or divine agencies (Morgan 1923, pp. 2, 8–9, 12; Broad 1925, pp. 56–58, 84–90). Against both these views, the first Emergentists tried to reconcile monism with pluralism by defending that qualitatively different levels of reality can come into existence by virtue of certain relational processes involving only lower-level natural entities and processes. Analogously, they tried to conciliate the continuist and discontinuist views of evolution, by defending the existence of processes of qualitative differentiation and generation of novelty within a causally and quantitatively continuous view of the evolutionary process. Emergentism cannot admit causal breaks, leaps, or gaps in Nature (Morgan 1923, p. 5, 39). In Lewes (1875, pp. 412–413), the term “emergence” is used, for the first time, in this new philosophical sense. Lewes opposes it to the term “resultant.” This opposition was drawn in the light of a fundamental distinction, elaborated by Stuart Mill (1843), between two ways in which several causes can act together to produce an effect. There are cases in which the joint effect of the causes is the sum of their separate effects, and cases in which it is different (Mill 1843, 427 ff.). Mill called the laws associated with the first type of causation, “homopathic,” and the laws associated with the second type, “heteropathic.” Heteropathic laws are the emergent laws of the special sciences, such as chemistry, biology, or psychology. According to Mill (1843, 431 ff.), given their particular nature, heteropathic effects cannot be accounted for by the linear principle of composition of causes (so named by analogy with the linear superposition principle of the composition of forces of Classical Mechanics). Therefore, if an entity is generated as an effect of non-additive relations between several other entities, that entity cannot be reduced to the latter in the traditional mechanistic way. That is the reason why Lloyd Morgan and C. D. Broad would later reject the validity of the principle of “algebraic summation” (Morgan 1923, p. 8) or the ideal of “Pure Mechanism” (Broad 1925, pp. 44–52) when it comes to explaining emergent processes. Despite their

differences, the first Emergentists agreed in identifying emergence with the generation of certain high-level organizations, whose properties or laws cannot be predicted, deduced, or explained, even in theory, solely in terms of the properties and laws of their respective lower levels. In other words, it is not possible to predict, deduce, or explain an emergent organization and its defining features from its constituents alone, taken by themselves or apart from their very organization. The first Emergentism thus represents an essentially organizational view directed against the atomistic model of micro-reductionism. According to Alexander (1920, pp. 45–46, 72–73, 323–329), emergent entities are high-level “constellations” of lower-level spatiotemporal motions instantiating qualities and lawful patterns of behavior that cannot be explained by or predicted from the most complete knowledge of their respective lower levels before they are so organized. According to Morgan (1923, pp. 15–16, 19, 64), at any stage of evolution, new kinds of entities, that is, new kinds of non-additive relatedness, manifest new properties and new ways of acting and interacting in the world of which there are no instances at lower or previous levels of organization. The ontological robustness of such emergent organizations is reinforced by the fact that they can affect “the go of events” at lower levels. Morgan’s emergentism explicitly includes the idea of a systemic or downward causation: “how things go” crucially depends on the level of relatedness at which events run their course (Morgan 1923, p. 16, 21, 278, 298). Among the first Emergentists, Broad was the author who developed the most the epistemological dimension of emergence theory. According to Broad, three classes of properties can be instantiated by composite systems. Ordinarily neutral properties are properties equally shared by the systems and their parts (such as mass). Reducible properties are systems’ properties that can, at least in theory, be deduced from structures, properties and laws manifested in lower levels or orders (such as the beating of the heart). Ultimate properties are systems’ properties that cannot be deduced, even in theory, from what we know from the lower orders (such as the reproduction of living organisms),

being thus considered emergents (Broad 1925, pp. 78–79). A property of a system organized in a specific *R*-way is emergent because it cannot, even in theory, be deduced from the most complete knowledge of the behaviors that system’s parts instantiate either in isolation or in any organization different from *R* (Broad 1925, p. 61). Here comes into play the role of what Broad called trans-ordinal laws, that is, laws which state that all systems composed of such and such lower-order parts in such and such proportions and relations have such higher-order properties. According to Broad, systemic properties, systemic intra-ordinal laws and trans-ordinal laws are emergent insofar as they cannot be deduced from laws of lower orders plus some general laws of composition (Broad 1925, pp. 64–65, 77–79). Emergent properties require specific laws of composition for the specific kinds of organizations that instantiate them. And in this sense, emergent properties and laws defy the characteristic micro or lower-level reductionism of classical mechanistic theory (Broad 1925, pp. 64–65, 77–79).

Despite their unquestionable merit in highlighting the limits of the classical mechanistic view, or in their attempt to reconcile the nature, at the same time monist and pluralist, of reality and the continuist and discontinuist views of evolution, it is widely recognized that the first Emergentists’ views also comprised problematic assumptions. Emergence was identified with micro-irreducible organizations. The problem now is to explain how such organizations get to be produced from their respective lower levels. It is not enough to say that emergents must be accepted with “natural piety,” as brute empirical facts admitting no explanation (Alexander 1920, pp. 46–47; Morgan 1923, pp. 1–12). The other problem was the postulation of a “*nisus* towards deity” to explain why nature’s evolution involves the emergence of higher forms of existence (Alexander 1920, pp. 346–347; Morgan 1923, p. 36). Finally, some of the chemical and biological examples of emergence then given, turned out to be discarded as real cases of emergence, at least in the sense of representing in-principle unexplainable facts (McLaughlin 1992). This partially explains why Emergentism would be later

perceived as a somehow skeptic attitude towards science, being largely ignored or criticized in the following decades of the twentieth century. The increasing dominance that Logical positivism and extreme empiricist views had in the philosophy of science after the 1930s also contributed to the temporary demise of emergentism.

The Rebirth of Emergentism

Nevertheless, between the late 1960s and beginning of the 1970s, the emergence-mechanism-reduction debate was gradually resumed. Among the multiple factors explaining this revival, it is worth mentioning the advent of Cybernetics and its associated theories of Information and Complexity in the late 1940s. The role that such theories play in the reassessment of that debate can be hardly overrated. Indeed, not only did they provide some plausible examples of self-organizing emergent processes equally observable in artificial, physicochemical, biological, cognitive, and social systems, but, for that very reason, they succeeded in overcoming the old rigid dichotomies between simple matter, life, and mind, trying to disclose the causal mechanisms through which the generation of such levels of organization and their crucial differences can be explained. More than that, through the use of Cybernetics' new tools and concepts, it was found that self-organizing processes not only are not exclusive to the realm of life but can also be described and explained in causal-mechanical terms. Still, this only became possible because mechanist theory was itself developed beyond the limits of its previous atomist, linear, and micro-reductionist paradigmatic views. Through the study of new types of causal processes, such as feedback and feed-forward cyclic relations, centralized and distributed hierarchical control, self-organization, adaptation, and even teleonomic behavior, Cybernetics paved the way to the development of a sort of neo-mechanism that would eventually lead to the reevaluation of old oppositions, such as emergentism/mechanism, emergence/explanation or explanation/reduction (Atlan 2011; Bechtel and Richardson 2010; Wimsatt 2007). In fact, some of

the most important emergentists approaches put forward between the late 1960s and the 1970s, such as those developed by the neuroscientist Roger Sperry, the social scientist Donald Campbell, or the philosopher of biology William Wimsatt, were precisely carried out in the light of this new theoretical framework. The other important factor explaining the re-emergence of Emergentism comes from within philosophy itself: the increasing recognition of the limits of the neo-positivist nomological model of explanation and its associated theory-reduction model and Unity-of-Science program. At this juncture starts a new chapter in the history of Emergentism. Informed by this new scientific and philosophical background, the problem of the relations between the different levels of organization – including those found within each science – and, in particular, the notion of organizational emergence bequeathed by the first Emergentists, are readdressed. Since levels of organization typically involve part-whole relations, the debate among philosophers evolved around the nature of the relations of dependence and independence between parts and wholes (supervenience, multiple realization, dynamic autonomy, etc.), in terms of their respective sets of properties, laws, and causal powers.

At this point we may then ask: How does Emergentism relate with the possible? How can emergence theory contribute to a theorization of that concept? As the overview presented above shows, the first Emergentists sought to argue that the domain of world's possibilities is not closed. Indeed, in its most general and basic sense, the notion of emergence refers to the generation of unexpected new possibilities (new properties, systems, states of affairs, relations, laws, behaviors, dispositions, capacities, or causal powers) leading to the formation of new, qualitatively different and irreducible levels or domains of existence. Given the particular subject of this Encyclopedia and the vast and multifaceted literature on emergence, the next sections will be limited to surveying some of the contemporary views on emergence that may be considered particularly relevant for the theorization of the possible from an ontological perspective.

Emergence Theory and the Possible

From the point of view of part-whole relations, emergence can be defined as the proper opposite of aggregativity. According to Wimsatt (2007, pp. 274–281), a system's property is completely aggregative – and thus not emergent – if the following four conditions are jointly satisfied: (i) the system property is invariant under operations rearranging the parts in the system or interchanging any number of parts with a corresponding number of parts from a relevant equivalence class of parts; (ii) the system property preserves its qualitative similarity under addition or subtraction of parts; (iii) the system property is invariant under operations involving decomposition and reaggregation of parts; and (iv) the system property is not affected by any cooperative or inhibitory interactions among the system's parts. Emergence thus comes in degrees. The failure of the first three conditions corresponds to an essentially combinatorial notion of organizational emergence. A system is emergent from the set of its parts, because some of its defining properties, powers, and eventually laws, are directly grounded on a specific global or macro-organization of its parts. Hence, the system can be taken as the real instantiator of some of its properties (*viz.*, its organizational properties) and, thus, as the real causal agent regarding the causal powers associated with such properties. Still, the parts are qualitatively unaffected by their integration in that organization, thereby instantiating the same properties and powers which they manifest, or would manifest, in any other kind of structure or even in an idealized state of complete isolation. This corresponds, in sum, to the idea that the emergence of a system's property relative to the properties of its parts indicates its dependence on their mode of organization. The violation of the fourth condition means that the system's property is dependent on the context sensitivity of the relational parts' properties to intra-systemic conditions. In this case, systemic emergence involves not only a dependence on a particular mode of organization of the parts but also on a certain organizational interdependence between the parts themselves (Wimsatt 2007, pp. 275–277). The idea that emergence

necessarily involves some kind of change or transformation of the base or lower-level entities has been variously stressed by many authors. The disagreement concerns the nature and degree of that change.

According to one view, presented by Wilson (2021) as the weak form of emergence, there is emergence when the parts of a system activate some of their “micro-latent powers” by virtue of their very organization (Shoemaker 2002). The powers associated with an emergent system's property thus constitute a proper subset of the lower-level powers of the parts. The system just inherits some of the powers of its parts. Emergent properties are then just actualizations of powers already existing in potency. For this reason, emergent powers are new but only in their state of actuality. Emergentism gets here close to a potentialist preformationism. A stronger notion of interlevel emergence defends that emergence necessarily involves a qualitative change of lower-level entities by virtue of their integration, as parts, in certain systems, but that the emergent properties and powers are genuinely high-level features of the global organizations of those systems. According to one of such views, emergent powers are real powers of certain wholes, but their parts only change by actualizing some of their already possessed intrinsic powers (O'Connor and Wong 2005). According to another view, parts can also acquire genuinely new causal powers (Gillett 2016; Santos 2015, 2020; Silberstein 2017). Against the “simple” view of aggregation, Gillett (2016, pp. 17–18) advocates the “conditioned” view of aggregation, which implies that parts may have some “differential” powers in complex collectives that they would not have if the laws or principles applying in simpler collectives exhaustively applied in the complex aggregation. In Santos (2015, 2020)' view, entities can acquire genuinely new properties and powers as interacting parts of certain structures of transformative relations. These relations are the key mechanism for the formation of genuinely new emergent properties and powers at the higher level of their systems' organizations. When embedded in specific structures of transformative relations, parts are qualitatively modified, and their behaviors conditioned in a system-wide interdependent

way. This means that lower levels are themselves partially determined by their integration in certain higher-level structures, thereby contradicting the individualistic essentialism of atomistic metaphysics and its associated lower-level reductionism. The problem here is whether the way systems affect their parts can be conceived in literal causal terms, although this issue is strongly biased by the widespread reduction of the notion of causation to physical processes of energy transference. For example, Gillett (2016) argues that certain composed entities determine (in a so-called “machretic” way) some of the powers of their components in a non-causal and non-compositional way. One way or another, particularly in hierarchically organized systems structured by feedback causal loops, system-wide constraints seem to have the power to not only constrain (by restricting) but also enable (by empowering) their constituent parts in terms of the causal powers and actual activities they may exhibit. In short, certain systems have the downward determinative power of restricting some possibilities while enabling others (Bishop and Silberstein 2019; Santos 2020). A similar view can be found, in contemporary social theory, in the notion of structural conditioning elaborated by Archer (1995). This notion contrasts with the atomistic view disseminated in the social sciences through methodological individualism and conveyed by the employment of agent-based models, rational choice theory, and decision and game theoretic principles (Humphreys 2016, pp. 1–15; Auyang 1999: 51–54; 120–121; 208–210). According to Archer’s morphogenetic approach, by engaging in interactions producing some change in the macrostructure of their system, the parts are also changed. There is thus a process of “double morphogenesis.” Furthermore, according to Archer, it is crucial to examine the interplay between the social structures and the human agency in order to explain society as a whole. Structure and agency operate over different time periods and their interplay can be investigated on the basis of two fundamental propositions: (i) that structure necessarily pre-dates the action (s) leading to its reproduction or transformation; and (ii) that structural elaboration necessarily post-dates the action sequences that give rise to

it (Archer 1995, p. 15, 76, 168). All these views thus entail the idea that there is a reciprocal and partial codetermination between systems and their parts, rather than an exclusively unidirectional relation of micro-determination. According to Gillett (2016), scientific emergentism calls for a “mutualist” position in the sense that one must recognize the existence of many levels of mutually determinative, and interdependent, composed entities. According to Silberstein’s notion of contextual emergence, the arrow of determination and explanation must always be multidirectional rather than exclusively bottom-up (Silberstein 2017, pp. 167–168). Santos (2020) argued that there is an in-principle compatibility between a relational-transformational notion of emergence and an interlevel integrative neo-mechanistic model of explanation, providing as an example, the formation process of the structural and functional identity of eukaryotic cells. One way or another, thus conceived, interlevel emergence only opposes to micro-reductionism, not to explanation.

Finally, two other perspectives put forward the alternative idea that emergence can be viewed no longer as a process leading from one compositional level of organization to another, but rather as a process occurring at a same, single level. According to a first “single level” perspective (proposed by Ganeri 2011), emergence is not the process whereby certain wholes come to acquire new powers that their parts do not have, but rather a process in which parts are transformed, thereby acquiring new causal powers by virtue of being parts of such wholes (Ganeri 2011, pp. 686–687). Emergence takes place at the level of the parts themselves, and the causal powers that a whole may possess are the new emergent powers that its parts come to acquire in their blending state. For example, it is not the case that a living body, taken as a whole, acquires cognitive powers by virtue of some transformations undergone by its constitutive elements, but rather that the constitutive elements themselves acquire cognitive powers when in the frame of a living body (Ganeri 2011, p. 688). Still, this view allows a kind of downward causation – called “assistive” – in the sense that the macro-states of the system contribute to the later transformations of the system’s constituents

(Ganeri 2011, p. 691). According to a more recent “single level” perspective, emergence does not even involve a relation between different levels of organization. Emergence simply relates different domains of properties and laws instantiated at different times. As a consequence, levels-talk can be discarded as irrelevant. This so-called “flat” account of emergence (Sartenaer 2018) has its roots in Humphreys (1997)’ notion of fusion emergence, which takes place when two or more elements, or their properties, fuse together in such a way that their individual existence is lost in forming a new single unified whole. Quantum entangled states or the production of molecules by covalent bonding are given as paradigmatic examples. According to Humphreys (2016) new account of transformational emergence – presented as a generalization of his earlier “fusion” approach – emergence occurs when an individual that is considered to be a fundamental element of a particular nomological domain transforms, by a change in at least one of its essential properties, into a different kind of individual, thereby becoming a member of a different nomological domain (Humphreys 2016, p. 60). The transformation of a muon into an electron, electron neutrino, or muon neutrino is given as a prototypical example. Guay and Sartenaer (2016) presented the example of the fractional quantum Hall effect – a process whereby from a gas of electrons, classified as fermions, are produced anyons, which are called quasi-particles, since they are neither bosons nor fermions. One distinctive feature of this approach is that emergence has nothing to do with modes of relatedness or organization, as transformation processes of flat emergence do not necessarily involve relations or interactions to produce or explain them (Sartenaer 2018, p. 9).

Forms of Predeterminism and Their Alternatives

From an ontological point of view, there is no doubt that interlevel or part-whole emergence stands in opposition to any form of synchronic micro-determinism or micro-reduction (either in structural or functionalist terms). But what about

diachronic determinism or micro-predeterminism? Is the domain of possibilities somehow fixed *ab initio*? Are all system’s properties or powers inherited from potentialities which their parts already-always bring with them? This is a contentious issue. For example, Alexander (1920, p. 323) and Broad (1925, p. 491) did not see any incompatibility between free mental action or genuine novelty and complete determinism. On the contrary, Morgan (1923, pp. 138–139) conceived emergence as an epigenetic, rather than a preformationist, process. In contemporary theories of emergence, we find other divergences. From a diachronic interlevel perspective, micro-determinism may mean that the system’s parts predetermine in a necessitarian way (in a program-like fashion) all properties or powers that their system will instantiate in the future. In a weaker sense, it may mean that the parts already have in themselves, as intrinsic potentialities (in a preformationist fashion), all properties or powers that their system may or may not instantiate in the future. In its diachronic version, predeterminism can thus assume an actualist or potentialist form. Against both perspectives, one may argue for a relational-constructionist view of potentialism, according to which relations may not only activate the manifestation of already existing potentialities but also construe new ones (Santos 2015, 2020). According to Sartenaer (2018), the “flat” approach to transformational emergence is, by definition, opposed to preformationism, defined as the view according to which the causal powers of what is (causally or otherwise) determined by x already exist in what is the determinative source of x , either in a manifest or in a latent way. On the contrary, argues Sartenaer (2018, p. 18), the “subset view” of emergence is clearly preformationist, while O’Connor and Wong (2005)’s view is only committed to a preformationism about causation, according to which the causal powers of an effect already exist in its cause, either in a manifest or in a latent way. As this brief overview shows, it is not only clear the intimate relationship between Emergentism and the notion of the possible, but also the different theorizations of the possible that can be sustained and developed within an emergentist perspective.

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Further Reading

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Emotion

Serena MASTRIA
Department of Electrical, Electronic, and
Information Engineering “Guglielmo Marconi”,
University of Bologna, Bologna, Italy
Marconi Institute for Creativity (MIC), Villa
Griffone, Sasso Marconi, Italy

Abstract

Emotion is here conceptualized as action disposition, in the sense that the primary function of human emotion is to motivate action. Creative behavior, among others, provides a concrete action bringing new insights into the possible and its cultivation. The role of emotion in creativity has been of considerable interest, with different authors depicting emotion as an intermediary state between a series of situational and personality predictors, on the one hand, and creative performance, on the other. Emotion is here explored in the

context of creativity research in order to understand how motivational tendencies can help in understanding the possibility of creative actions that take place “in between” actors and their environment. This entry then starts with a brief conceptualization of emotion as action disposition before moving to the relationship between emotion and creativity. This relation will be then examined taking into consideration the notion of the possible within an action framework. Some final considerations are offered toward the end to reflect on the importance of studying emotion, conceptualized as action disposition, in creativity, which provides a concrete investigation of the possible.

Keywords

Emotion · Motivation · Creativity · Action · Possible

Emotion as Action Disposition

A number of authors have attempted to elucidate the origin, neurophysiology, experience, and function of emotions, proposing different theories about emotion. Part of the difficulty in studying emotion is defining it. Indeed, although we have a huge terminology for describing our individual emotions, it is difficult to find consistency between researchers about a single shared definition of emotion. For instance, some investigators have highlighted the discrete nature of emotions, along with the specificity of physiological responses associated with each emotion, such as anger, disgust, fear, happiness, sadness, and surprise (Ekman et al. 1983). Differently, other scientists have stressed the key role of cognitive processing such as appraisal in defining the expression and experience of emotion (Schachter 1975; Schachter and Singer 1962; Scherer 1987, 2001). Lastly, other researchers have emphasized the role of motivation in regulating and controlling behavioral and physiological reactions in both human and animals (Lang et al. 1997; Lang and Davis 2006; Russell and Barrett 1999). Despite the lack of a definite characterization of

emotion, one point that many researchers agree is that the main function of emotion is to motivate *action*. Actually, the term “emotion” stems from the Latin *movere*, which means “something that moves one.” Whereas “emotion” is usually used for describing events that are experienced to be moving, generating an affective response in individuals, “motivation” is typically used in reading the actions of animals. It is worthy of notice that individuals and animals share some important characteristics, i.e., the responses that happen when an organism perceives and responds to significant events in the course of surviving. From an evolutionary perspective, emotions are expressed through actions directed to preserve survival (Darwin 1872).

The literature is characterized by a rich set of observations concerning the relation between emotion and action in both human and nonhuman primates. For example, anatomical studies in monkeys have demonstrated the existence of influences of the limbic system, a set of brain structures supporting a variety of functions including emotion and motivation, on motor system. Specifically, some components of the limbic system and the anterior cingulate areas seem to be connected to the supplementary motor area, which in turn is linked with motor cingulate areas (Luppino et al. 1993; Morecraft and van Hoesen 1992). Similar evidences have been found in humans, in which the translation of emotion to action seems to involve the nucleus accumbens that receives inputs from limbic structures, by direct and indirect mesolimbic dopaminergic projections from the ventral tegmental area of Tsai, and sends signals to the motor system via the globus pallidus (Mogenson et al. 1980). Recent human neuroimaging studies seem to corroborate that emotional information processing produces higher activity of emotion-related areas together with action preparation-related areas (De Gelder et al. 2004; Grèzes et al. 2007).

Although emotional expression is extremely varied, emotions can be described as a result of evolution as the motivation to avoid threats and attain appetitive goals endorsed our ancestors to survive and eventually develop into what our species is today. This perspective defines that

emotions are founded on the activation of motivational circuits that are engaged by significant stimuli that symbolize threats or supports to the organism's survival. In other words, action is a basic constituent of goal-directed behaviors, such as attack, flight, food procurement, and other motivational-emotional states. Using the terminology of Konorski (1967), the "emotive brain" (i.e., the limbic system) contributes to the initiation of biologically significant actions. In other words, in both individuals and animals, stimuli that support survival produce behaviors toward the eliciting stimulus, whereas those that menace the organism engage retraction, escape, or avoidance. Undoubtedly, this simplistic approach involving a bidirectional goal-related behavior cannot contain the many subgoals of individuals, who are more creative and flexible in order to interact with the complex environment in which we find ourselves. However, studies from affective language confirmed the view that different emotions might be organized into easier bidirectional actions of approach and withdrawal. For instance, Wundt in his approach about the introspection described that pleasure, tension, and inhibition were the three primary dimensions of feelings (Wundt 1896). Similarly, Titchener (1908) emphasized the principal dimensions of pleasantness and unpleasantness. Some other researchers later assessed this inquiry empirically, by using evaluative responses of individuals to a series of stimuli. Specifically, Russell and Barrett (1999) proposed a two-dimensional structure for describing the affective domain: the valence (pleasant vs. unpleasant) and activation (calm vs. aroused) dimensions (see also Barrett 2006; Russell 2003). Following a similar motivational approach, Konorski (1967) suggested that emotional states are consistent with a preservative/protective organization: preservative emotions involve affects as sexual passion, joy, and nurturance, whereas protective affects embrace fear and anger. More recently, Rolls (2004) suggested that emotions can be defined as states elicited by rewards and punishers, which functions include working to obtain or avoid the rewards and punishers, respectively. A reward is anything for which an individual (or an animal) will work (e.g.,

winning a wide sum of money). A punisher is anything that an individual (or an animal) will escape from or avoid (e.g., approaching car). Based on the similarities between individuals and animals, Lang et al. (1997) offered one of the most influential theoretical model on human emotion, defining it as the result of a dynamic influence of language, physiological, and behavioral responses. Specifically, Lang proposed that human emotions can be measured as (i) expressive and evaluative language of affective experience that involves reports about awareness of affective reactions such as verbal descriptions (e.g., "I'm sad"), ratings of emotion (e.g., ratings of sad on 1 to 10-point scale), or reports of physiological responses (e.g., identification of bodily changes); (ii) physiological changes that involve bodily actions mediated by somatic and autonomic systems; and (iii) behavioral responses, which are usually measured in studies of motivated behavior in the animal laboratory, such as propensity of avoidance. Definitely, significant stimuli engage neural systems that enhance attention and facilitate perceptual processing and active a series of reflex responses that mobilize the organism for the motor action (Hebb 1949; Schneirla 1959; see also Lang and Davis 2006). Thus, overall, human emotion can be described as disposition to action (Frijda 1986; Lang 1979, 1985), to identify environmental events that menace or sustain our life.

Emotion in Creativity Research

Among others, creative behavior provides a concrete action bringing new insights into the possible and its cultivation. Focusing on the role of emotion in creativity research allows introducing the notion of human possibility in the sense of both becoming conscious of it and dynamically exploring it. For this reason, emotion is here analyzed in the context of creative behavior, to understand how motivational tendencies can help in understanding the possibility of creative actions that take place "in between" actors and their environment. Creative actions are in fact conceived as the basis of the possible in all its forms of

expression including possible worlds, possible selves, possible pasts, and possible futures (Glăveanu 2018). Being creative enables to examine a problem, situation, or concern from multiple viewpoints, exploiting and expanding the possible for both self and others in the environment. In other words, creativity is here employed in trying to answer the question “what is possible?”.

For survival and prosperity, people need to adapt to changing environments, to solve problems, generate new ideas and insights, and create new products and services. Human brains have evolved to sustain and promote the creative behavior. The process of creative thinking is widely defined as the ability to generate outcomes potentially original and effective for a particular context (Eysenck 1993; Beghetto and Kaufman 2007; Corazza 2016; Runco 2004; Simonton 2003; Sternberg and Lubart 1999). Within the human creative cognition, emotion stands out as one of the most broadly studied and least disputed predictors of creativity, as everyday emotions can operate as strong intrinsic and/or extrinsic energies able to impact the creative thinking process (Amabile 1983; Amabile et al. 2005; Davis 2009; Zenasni and Lubart 2002). They are basically proposed as mediators and moderators of the creative thinking process. Only lately some exciting research has clarified the role played by emotions, measured in terms of hedonic valence and affective arousal, on creative performance (Baas et al. 2008; De Dreu et al. 2008; Silvia and Brown 2007), by placing the emotional experience as one of the key mechanism underlying the creative process.

A number of studies have employed a broad range of induction procedures (e.g., emotional imagery, affective stimuli, etc.) to engage participants in the intended emotional states, measuring various indexes of creativity. The results from the majority of these studies reveal that positive affective states, as compared to neutral conditions, enhance creative performance focusing on specific phases of divergent thinking (i.e., generation, evaluation), categorization (i.e., cognitive flexibility), remote associate test, and insight problem-solving tasks, as individuals tend to

make richer associations between knowledge frames when in a positive affective state than when in a neutral state (Ashby et al. 1999; Lyubomirsky et al. 2005; Mastria et al. 2019). Other studies suggested that it is the intensity of the emotional experience measured with both positive and negative high-arousal emotional states than can enable creativity, as compared to low-arousal states (George and Zhou 2007; Russ and Grossman McKee 1990). In line with these findings, it has been shown that highly arousing circumstances (including negative ones such as frustration) can even booster creative performance in individuals with specific personality traits (Agnoli et al. 2019). As a whole, although it is not still completely clear the extent to which positive and negative states facilitate or inhibit creativity, scientists are largely in agreement that emotions affect various indexes of creativity.

In the attempt to understand the emotion-creativity link, neuroscience has pointed to the contribution of the dopaminergic (DA) system in creativity (Heilman et al. 2003; Flaherty 2005). Individual differences in terms of creative performance, measured by divergent thinking tasks, in which individuals are required to generate ideas by exploring many possible solutions in response to verbal or figural stimuli, were found to be positively correlated with gray matter in DA system regions (Takeuchi et al. 2010). Moreover, cortical dopaminergic activity seems to be involved in cognitive flexibility (Cools 2008; Garcia-Garcia et al. 2010), which is a key executive function that facilitates the creation of original and effective ideas in creativity. Some interesting research has pointed out that phasic changes in dopamine levels, affective changes, and changes in creative performance are strongly interrelated. Indeed, the neurotransmitter dopamine seems to mediate the relationship between human creative performance and emotion, such that participants with medium eye blink rates (EBR), which is an indirect but well-established physiological marker of individual dopamine levels (Groman et al. 2014), showed more flexible behavior in divergent thinking (DT) tasks (Chermahini and Hommel 2010). In addition, positive emotions, presumably

associated with increased dopamine release in the brain (Beninger 1991; Schultz 1992), enhanced EBR, predicting the associated increase of flexibility in DT (Chermahini and Hommel 2012). As a whole, an adequate level of dopaminergic activation seems to enhance creativity in tasks focusing in particular on divergent thinking, and DA system mediates the connection between positive emotion and creativity.

The positive impact of emotion on creativity depending on DA system calls for closer consideration of individual differences in terms of personality. Among the personality traits, trait emotional intelligence (i.e., trait EI) is the individual tendency to process emotional information, including recognition of one's own emotions and emotions of other persons, and adaptive regulation of emotions, which eventually requires a more effective solution of life difficulties (Petrides 2009). In particular, it has demonstrated a strong relationship between trait EI and affective arousal, showing that trait EI can modulate the impact of arousal on behavior (Pittarello et al. 2018). In particular, individuals with high EI are able to exploit emotionally arousing experiences, especially the negative ones associated to creative frustration, to increase their creative performance (Agnoli et al. 2019). Finally and importantly, indicators of emotional intelligence have been linked with the activity in the DA system, as the gene of dopamine receptor DRD2 takes an active part in providing emotional recognition, emotional stability, and physiology of the brain during perception of affective stimuli (Kosonogov et al. 2019). Overall, empirical research on the relationship between creativity and emotion, measured from a subjective, behavioral, and physiological point of view, seems to provide a direct evidence for a strong interrelationship between these two complex phenomena.

Emotion, Creativity, and the Possible

A strong interrelationship seems to emerge between emotion and creativity, both conceived within an action framework. Emotion exactly means to move, touch, or prepare for action, and

this is strictly associated with actions of approach and withdrawal characterizing the basic behavioral responses supporting survival (Frijda 1986; Lang et al. 1997). In a similar manner, creativity can be conceptualized as action, since a creative behavior starts from an understanding of the interactions between creators and their environment (Glăveanu et al. 2013). Thus, emotion was addressed here in the context of creativity research, as creative actions can offer a unique perspective to the topic of the possible, through specific experiences such as remembering the past, imaging the future, considering alternatives, anticipating problems, and engaging counterfactual thinking. A creative act emerges as a relational, intersubjective phenomenon incorporating an organism in its environment and opening new possibilities for the person, the group, or society as a whole, integrating emotional and motivational aspects (Glăveanu 2018). Emotion in such creative context may modulate or “rules” the creative actions. Emotion or motivational tendencies have in fact been considered as an integral part of the process of creation. Emotional experience modulates the creative thinking process at the beginning, during, and at the end of the activity. It is enough to consider the excitement or motivation that drives the generation of a creative idea or the variety of emotions while working on it or the sense of pleasure and satisfaction (or desperation) once reached (or unreached) a truly creative idea (i.e., creative inconclusiveness). Emotions have been recently described as the core or the “spinal cord” of the creative thinking process, as emotional experience is the essential (although not enough) determinant of the process (Agnoli and Corazza 2019). In fact, embracing the idea that motivational forces drive the thinker's creative behavior, this would help us to understand the complex interconnection between creativity and emotion, examined from different perspectives (subjective, physiological, and behavioral). This means that emotion might not only influence the process of creation, as it has been suggested in the past, but lead to its realization. Put differently, emotions in both human and animal life are the organizers of the creative interactions with the world. Such interactions are constructed and

reconstructed within explorations of the past, the future, and the possible. Driven by this new perspective that takes into consideration the concept of the possible, future research could disentangle how and the extent to which emotional and/or motivational tendencies determine the creative thinker's actions.

Conclusion

Emotion actually takes place at and through the face between individual and the environment. Similarly, creative actions occur not “inside” creators but “in between” creators and their environment, offering a unique perspective to the topic of the possible. The research on emotion-creativity link seems to show that emotions could be conceived as “supporters” of the creative behavior, in the sense that the dynamic interplay between “internal” and “external” creative actions may be driven by motivational tendencies. From this reasoning, it becomes clear that emotion and motivation play a crucial role in defining the creative thinking process. Here, it is argued that a deeper understanding of the interplay between emotion and creativity needs to be guided by an integrative framework that incorporates the notion of action, including a relationship to the future and the possible. Finally, it is important to highlight that, given the difficulty in defining human emotion and in explaining the interconnection between emotion and creativity, this reasoning is not intended to provide a comprehensive explanation of these complex dynamics, but it is meant to provide a first reflection on the utility of considering an action framework for the study of emotion in creativity, possibly providing a more concrete investigation of the possible.

Cross-References

- [Counterfactual Thinking](#)
- [Creative Inconclusiveness](#)
- [Creative Problem-Solving](#)
- [Creativity](#)

- [Divergent Thinking](#)
- [Emotional Intelligence](#)
- [Insight](#)
- [Possible in Neuroscience](#)

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Emotional Intelligence

Sergio Agnoli

Marconi Institute for Creativity, University of Bologna, Sasso Marconi, Italy

Abstract

Emotional intelligence (EI) is here analyzed as a construct referring to the individual differences in perceiving, regulating, managing, and exploiting emotions, assuming in particular a trait approach to the exploration of the phenomenon. Specifically, the role of trait EI in the definition of the possible in space and in time is addressed, analyzing how individual differences in the management and use of emotions can explain the emerging of different pasts, different futures, as well as different possible worlds. Moreover, the role of trait EI in the expression of the individual potential is explored, taking as example two research topics (i.e., prosocial behavior and creative performance) to understand how emotional intelligence can help in understanding the emerging of possible selves. Finally, future possible research scenarios are offered to explore the use of trait EI as a study variable in the investigation of the possible.

Keywords

Emotional intelligence · Emotional self-efficacy · Trait EI · Individual differences · Emotion management · Emotion regulation · Potential

Introduction: Emotional Intelligence as the Realm of Subjective Adaptation

Emotional intelligence is a psychological construct that is entered in people's common sense, and it is commonly used to identify the most adapt way to exploit emotions in several life contexts, from work to everyday life. In a way akin to intelligence, which makes reference to the most adapt cognitive abilities to answer to the world

complexity (see the ► “Intelligence” entry in this encyclopedia), the emotional intelligence concept is indeed usually intended as the best use of emotions to adapt to the complexity of the environment. The term was first coined by Salovey and Mayer (1990), who referred to emotional intelligence as a multicomponent construct defined by a set of emotional abilities used to effectively appraise, express, and regulate emotions in oneself and others and to exploit emotions to plan and achieve in one’s life. The term has been then spread across the wide audience through the best seller *Emotional Intelligence* by Goleman (1995), who extracted principles from the emotional intelligence research to apply this concept to several everyday domains. Emotional intelligence research then extensively demonstrated the theoretical and practical implications of a construct (which is distinct from the cognitive intelligence construct) that conveys the ways in which people express, regulate, and manage emotions in oneself and others. Several studies and meta-analytical research demonstrated the predictive and explicative power of emotional intelligence on a variety of variables, ranging to psychological (Andrei et al. 2014, 2016) and physical well-being (Andrei et al. 2018; Andrei and Petrides 2013) to scholastic (e.g., Agnoli et al. 2012) or work success (Brackett et al. 2011).

Theoretically speaking, one of the central questions in the study of emotional intelligence pertains whether this construct can be intended in a similar way to cognitive intelligence, which is identified as “the set of abilities involved in the achievement of rationally chosen goals” (Sternberg 1990, p. 43) and measured through maximum performance tests. According to Thorndike (1921), this set of abilities can be considered as “good responses from the point of view of truths or facts.” An objective definition of the truth as well as of the correctness of the responses is implicit into these definitions of intelligence. This same approach has been adopted to explore and define emotional intelligence according to the ability approach (Mayer et al. 2008), which identifies several emotional skills organized around four distinct emotional abilities: perceiving emotions, using emotions, understanding emotions,

and managing emotions. This approach conceives these abilities as essential to adapt correctly to the world; all behaviors provided using each of these abilities can be judged with respect to the degree of their correctness, which is determined through the correspondence with the same behaviors provided by a series of experts or by the general population. The need of a “correct truth” has been a point of criticism to this approach (for a review, see Fiori and Vesely-Maillefer 2018). In other terms, can the concept of correct or best performance (identified through truly veridical criteria, such as the responses of experts) be associated with the term “emotions,” which is by definition the realm of subjectivity? Does a *correct* emotional response exist? Even if the concept of correct can be defined as the most adapt emotional behavior in a given context, as identified by consensus in a specific group of experts, culture, or society, this approach opens the door to a variability in the definition of the concept of *correct*, which does not exist, for instance, in the domain of cognitive intelligence. This is the main reason why the trait approach to emotional intelligence proposed by Petrides (which is defined as trait emotional intelligence, trait EI; Petrides et al. 2007) includes in the conceptualization of the construct the intimate subjectivity of the phenomenon. Whereas the ability EI approach captures the construct using maximum performance measures, the trait EI approach is focused on the use of self-report instruments (Petrides et al. 2016a). A number of studies have demonstrated the absolute independence of the constructs measured by the two approaches (see Petrides et al. 2016b).

However, the distinction between the ability and the trait approach goes beyond the mere measurement question. It is related to the way the subjective dimension of emotions can be included in the construct of emotional intelligence. According to the trait EI approach, emotional intelligence is located at the lower level of personality hierarchies, and it is constituted by a constellation of emotional perceptions (hence “trait emotional self-efficacy” as an alternative label for the construct; Petrides et al. 2007). In other terms, trait EI conveys all emotional aspects of personality, which is a huge domain complying

with motives, attitudes, social values, interests, emotional tendencies. A series of factorial analyses (Petrides et al. 2016a; van der Linden et al. 2017, 2018) showed that all these emotional aspects can be organized around 15 different facets which form 4 broad factors (well-being, self-control, emotionality, sociability). According to the trait EI approach, it is the personal aspects of one's emotional perceptions, experiences, and interactions that is central for the definition of emotional intelligence. This approach is therefore particularly suitable to capture the individual differences in the management and use of emotions. In the present entry, the main focus will be to understand how the intimate differences between individuals (i.e., subjectivity) in terms of emotional intelligence are related to the concept of the possible. For this reason, the trait EI approach will be mainly exploited, in order to understand how the perception in emotional self-efficacy can provide new explicative models to the realm of the possible. Through this analysis, specific proposals will be indicated on how the joint exploration of emotional intelligence and the possible can provide new advancements in the understanding of both phenomena.

Emotional Intelligence and the Possible

In order to explore the relationship between emotional intelligence and the possible, it may be of undoubtable convenience to make reference to a framework offering a clear overview of the different declinations of the possible. For this reason, in the following paragraphs, the different ways of engaging with the possible as described by Glăveanu (2018) will be taken into account. Specifically, Glăveanu stated that the possible can be engaged through different perspectives, exploring possible worlds, possible selves, possible futures, and possible pasts. Exploring possible worlds pertains the understanding of the possibility of imagining and creating alternative worlds, both possible inner worlds and possible outside "real" worlds. Possible selves are related to the not-pre-determined nature of human beings. The possibility to conceive possible selves is granted by the

plastic nature of human personality and by its material (i.e., biological), social, and symbolic composition. This level of possible can be identified as the layer where individual differences are ontologically and phenomenologically expressed and conceived. Possible futures are instead related to the possibility to anticipate the direction and expression of reality in different alternative potential futures. Approaching possibility by looking to alternative futures is related to our ability to forecast and to foresight alternative directions for our lives and acting into the reality to realize these possible alternative scenarios. While we live constantly oriented toward the future, we are guided in the present by our identity, which is substantially grounded in the past. When thinking to the past, it is hard to conceive alternative versions of past facts, because of the intrinsically objective nature we assigned to the past. However, the ability to conceive alternative pasts gives us the possibility to create alternative narratives about our identity, to develop structural memories on which to shape our personality, in other terms, to create our identity as persons, communities, cultures, and societies.

If we intend emotional intelligence as the construct that captures the differences between individuals in expressing, regulating, and managing their emotional experiences, it might result particularly significant to understand its relationship with the definition of possible worlds, possible selves, possible futures, and possible pasts. Emotions are indeed our modality to interact with the external and internal world. The modalities through which we express, regulate, and manage the relationships with the environment/context may define our personal self, our possible world, past and future, creating a plethora of alternatives, which are potentially as numerous as the number of people on the world, in the present, in the past, and in the future. In the following paragraphs, the relationships of emotional intelligence with the possible will be discussed, first addressing how trait EI can be associated with the possible in the space (possible worlds) and time (possible pasts and possible futures) and then with the possible definition of potential selves.

Emotional Intelligence and Possible Spaces and Times

Trait EI in possible spaces. The first layer where emotional intelligence can be proposed to define the possible is the space dimension. For space dimension, we do not intend only the physical world, but (especially) the sociocultural space where we are immersed in. This dimension pertains our inner world as well as our external world, both sharing the same sociocultural perspective. These two worlds are a continuous spring of emotional stimuli, which we need to perceive, understand, regulate, and manage. The role of emotional intelligence emerges therefore to be essential in our relationship with the world. However, we are all but passive receivers of the stimuli coming from the inside and from the outside. We are active builders of the worlds by filtering and regulating the emotions and by using the emotional charge coming from the internal and the external world in order to define ourselves and the world itself. A lot could be said on the relationship between trait EI and the social world, taking into account that one of the main dimensions defining this construct is the *sociability* factor. In the following, some implications and reflections inspired by recent research are described.

One of the main functions of emotional intelligence is, according to O'Connor et al. (2017), to optimize (or enhance) our behavioral performance in stressful conditions by regulating negative emotions. This function should not however be associated only to negative or stressful conditions, but to any sort of emotional situations we can encounter in our world. Generally speaking, high trait EI people are more able to increase their performance through the perception, regulation, and management of their emotional reactions. The question hence is what we intend for better performance. In general, a better performance can be defined as the choice/decision or as the behavior that maximizes the advantages to an individual, in other terms, the behavior that allows the individual to adapt in the most suitable way to her/his definition of the world. In order to take the maximum advantages for themselves, high trait EI

individuals exploit at their best the emotions coming from the external worlds. In doing so, they shape their world. Taking about the possible, individual differences in emotional intelligence allow possible alternative worlds to exist between individuals.

Research indeed suggests that different possible worlds are perceived by high trait EI individuals and by low trait EI individuals. First, reality can find its expression in a spectrum of possible alternatives because of the different perception of the emotional stimuli coming from the world. A recent result from the literature on trait EI shows, for instance, that high trait EI individuals have an attentional bias toward positive emotions (Lea et al. 2019). In the study by Lea et al. (2019), high trait EI participants were associated with a higher attention (as measured through eye-tracking) to positive emotional stimuli (happy faces, positive social situations) in comparison with negative or neutral stimuli. Acting on the attentional filters, emotional intelligence is therefore able to shape the perception of the external worlds and the understanding of our social environment, by choosing to pay attention toward positive emotional situation, and to avoid paying attention to negative emotions. A fundamental facet defining trait EI is indeed optimism (Petrides 2009), which is a behavioral tendency to act on the world in a positive modality. This aptitude is able to define (or not define) possible scenarios, which, in the case of high trait EI individuals, lead them to act on the world in a more proactive or positive way.

Can therefore trait EI help explain the possible perspectives we had about our societal environment? Recent results exploring the perception of social harmful events, such as terrorism attacks, seem suggesting that trait EI has a fundamental role in understanding the possible reactions to these events and as a consequence in defining the sociopolitical positioning toward these events. Specifically, in their seminal work, Rubaltelli and colleagues (2020) showed that being exposed to a repeated media coverage of terrorist attacks, being stressful events, can increase our arousal response and as a consequence can alter the perception (in a negative way) of Arab immigrants being the principal perpetrators of these events as represented in

the media. However, this research showed that the trait EI level acts as a main variable in this relationship, being able to regulate the effect of the exposition to terrorist attacks, reducing the arousability of these events. As a main consequence, high trait EI individuals felt less threatened by terrorism and had a better perception of outgroups identified as principal perpetrators of terrorism actions. This example shows how trait EI is able to shape the definition of our social space, and thus the possible in society, through the management of the emotional impact of relevant social events.

What has been described in this paragraph seems to suggest that trait EI is able to drive a positive attitude toward the internal and external environment, being able to shape our world toward positive values. This however is not totally true. As previously said, trait EI is aimed at providing the maximum advantages and adaptation for an individual, which are often related to positive attitudes toward other people and societal challenges. However, the positive disposition of trait EI should be intended as positive returns for the individual and should be freed from moral values. A recent study on the role of trait EI on dishonesty is a clear example of the adaptive function of this trait (Pittarello et al. 2017). In this research, the balance between benefitting from dishonesty (taking advantages from cheating in a computer game) and keeping a positive self-image has been explored. Pittarello et al. (2017) showed that cheating was associated with physiological arousal (higher skin conductance led to reduced cheating). However, trait EI emerged to be able to regulate this effect by reducing the physiological reaction to cheating. As a consequence, high trait EI participants were more likely to benefit from cheating. The findings emerging from this research highlighted how emotional intelligence is able to license people to act unmorally, by reducing the tension existing between acting upon moral beliefs and serving their self-interest. Again, therefore, trait EI seems to shape our possible relationships with the world and with the norms regulating it (see also the ► “Norms” entry in this encyclopedia).

Trait EI in possible times. While emotional intelligence emerges as essential in the representation of possible worlds, it is equally important to highlight that this trait is fundamental in shaping our identity through the representation of possible pasts and by predicting our behavior in possible future scenarios. It is clear that the majority of the results emerging from the research highlighting the importance of trait EI in shaping our perception of and our relationship with the world can be expressed in the representation of past and future worlds. However, some specific results from the literature seem to suggest that trait EI is directly involved in the representation and perception of past events as well as in the way we act on the world to determine possible future scenarios for ourselves and for the others.

Past events and our memories of them are essential contributors for the development of our identity from an individual, cultural, and social point of view. The perception of the past is one of the fundamental bricks on which our identity is founded. Specific psychological constructs have been highlighted as particularly suitable to explain the mechanisms in the perception and representation of the past. Emotional intelligence seems emerging as an important construct in this sense. The representation of the past is, for instance, essential to distinguish truth from falsity. Emotional intelligence has been specifically associated with a higher ability to detect deception (Stewart et al. 2019). According to Stewart et al. (2019), this ability could be essential in driving social situations and social relationships. Moreover, it could be argued that an increased capacity in deception detection could delineate the definition of our narrative of past events, therefore broadening or restricting the number of possible alternative pasts. The narrative of our past events is indeed organized around a selection of central memories, which are main attractors around which our identity is defined. Trait EI has been demonstrated as important in the selection and in the ability to remember past events (Mikolajczak et al. 2009). Mikolajczak et al. (2009) indeed demonstrated that trait EI (and in particular its self-control facet) is highly related to the memory processes related to past memories. Trait EI in

particular allows memory to adapt and diverge according to the situation: in neutral contexts, high trait EI individuals tended to remember with a higher probability positive events, whereas in stressful contexts they are more prone to remember negative events. Low trait EI individuals instead tended to constantly recall average neural memories independently from the context. As per the stressful contexts, these findings suggest that trait EI allows to confront with aversive situations rather to avoid them, which is essential to cope effectively with these events. On the contrary, having a low trait EI level leads to greater mood deterioration and to a higher cortisol secretion in stressful situations (Mikolajczak et al. 2007). These results are consistent with the research on optimism, showing that optimists pay more attention and remember better negative information as well as show a deeper processing of them (Aspinwall et al. 2001). The ability to rely and to remember past negative events could therefore allow to have more expertise and information in present critical situations and could account for the higher ability by high trait EI individuals (and optimists) to cope with these situations. In other terms, the increased spectrum in the ability to remember possible alternative events of the past as well as in the ability to process past emotional events, which are associated with trait EI, might allow to broaden the spectrum of the possible also in the present and in the future. This assumption seems consistent with the results of a recent study exploring the information processing of past performance in financial markets and its association with the investment behavior tendency (Rubaltelli et al. 2016). The findings of this study showed that high trait EI individuals were more aroused (i.e., had a larger pupil dilation) when looking at past performance of stock funds, especially in the case of positive and negative performance. In turn, this higher arousal led them to invest more money (and therefore to risk more) on a fund irrespective from its past performance. Again, the results of this study seem to confirm that a higher sensitivity and ability to manage past emotional events is not only associated with the definition and remembering of past events but also with the definition of present and future possible behaviors.

It is worth highlighting that if on the one hand a high trait EI level can broaden our behavioral possibilities in the present and in the future, on the other hand a low trait EI level could restrict our vision on possible presents and possible futures. Milojević et al. (2016), for example, demonstrated that juvenile delinquents (with an average age of 16 years) were characterized by a lower trait EI as compared to adolescents from the general population as well as by a lower self-efficacy and by a less optimistic representation of themselves and of their past, present, and future. A restricted pessimistic vision of possible futures could be therefore associated in this case with a reiteration of past negative behaviors. Trait EI could be considered important in freeing the potential to conceive possible alternative scenarios for the future and to allow positive (i.e., adaptive) behavioral tendencies to happen in the future. This claim seems to be consistent with the results by Gallitto and Leth-Steensen (2019) who demonstrated in a longitudinal study that trait EI is an important moderator in the relationship between parental nurturing and the development of prosocial behaviors. The finding of this study in particular showed that the level of trait EI of a sample of preadolescents (age range 10–12) interacted with a positive parenting style in predicting (after 2 years) the probability to show prosocial behaviors. Trait EI emerged therefore to be beneficial in fostering positive future functioning, especially when associated with additional favorable factors such as positive parenting nurturance.

Emotional Intelligence and Possible Selves

Research on emotional intelligence found that high trait EI people are more sensitive to emotional stimuli (Petrides and Furnham 2003) and are more prone to pay attention to arousing (both positive and negative) events; in other terms they feel (both positive and negative) emotions at a higher intensity than low EI people, especially when they are asked to cope with these emotions (Petrides and Furnham 2003). As the previous paragraphs highlighted, it is however the use of

this higher emotional charge that makes the real difference between high and low trait EI individuals.

The use of the emotional charge is intrinsically related to the individual potential or, in other terms, to the possible expression of the self in our behavioral performance. The inclusion, the management, and the use of the energy coming from emotions (i.e., from our relationships with the internal and external world) into our behavior are essential elements for broadening our possibility to express alternative behaviors. Without such an energy, our behavior would be stacked into fixed automatisms. The management and use of this energy could allow us to explore unexplored territories into our spaces and times, by putting in place more risky or energy-demanding behaviors that could lead to more adaptive, positive, and new consequences. In the following paragraph, two examples will be provided on the role of trait EI in the expression of the individual potential, in terms of prosocial behavior and creative behavior.

In a first work (Agnoli et al. 2015), the reasons behind the differences existing in the tendency to help others in need have been studied adopting an emotional intelligence perspective. Specifically, the role of trait EI in the expression of the individual potential in the helping behavior has been explored through the use of an experimental paradigm manipulating the feedback to the prosocial behavior acted by a sample of participants. In particular, participants in a first study were asked to perform a task where they could gain money to help children in need. They have been then randomly assigned to one of two conditions: in a first condition, after each of five blocks of trials, they were informed that they were able to save the children (positive feedback condition); in a second condition, after each block, they were informed that were not able to save the children (negative feedback condition). A rapid deterioration of the mood state emerged in the negative condition, and a substantial difference was found between participants characterized by a high level vs. low level of trait emotional intelligence. Whereas low trait EI participants progressively decreased their performance, high trait EI

participants, after an initial significant decrease of performance in the helping task, progressively increased their helping performance in the following blocks of trials. These results showed that even if high trait EI individuals experience an initial higher impact of the emotional events, they used this emotional charge to increase their performance in order to help others in need. The authors called this effect “Sisyphus effect,” since, like the mythological figure, participants felt an increasing amount of inefficacy for their repeated failures, notwithstanding their efforts. However, high trait EI individuals were able to push forward their potential to help others and increased their performance to obtain a success (save children’s lives).

Similar results, using an equally structured experimental paradigm, have been obtained in another study devoted to the analysis of the creative potential (Agnoli et al. 2019). In this study, participants were asked to produce alternative original uses for some common objects (using a classical task for the study of divergent thinking, the Alternative Uses Task, Guilford 1967). Again, participants were randomly assigned to one of two conditions: in a positive feedback condition, after each of five blocks of trials, participants received a feedback informing them that their responses have been creative; in a negative feedback condition, participants were always informed that their responses have not been creative. Again, fundamental differences emerged in the negative conditions. Both high and low trait EI participants were characterized by an increase of emotional arousal (increase of pupil dilation) with the repeated negative feedback. However, whereas low trait EI participants were characterized by a progressive drop in their creative performance (i.e., a decrease in the originality of their response), high trait EI participants increase progressively their creative performance. These results testify that high trait EI allows to include into the creative process the emotional energy coming from the environment, managing the frustration emerging from repeated failures, and charging the process with an emotional energy that allows to push further the creative efforts.

Taken together, the results emerging from these studies showed that trait EI is not only fundamental to manage the emotional energy coming from our interactions with the world, but it is also essential to exploit this energy by transforming it in a further element defining our potential. The behavioral performance is a clear expression of the possible in the self, and it emerges as the result of a complex ensemble of individual (cognitive, conative) and social factors. Emotions play a substantial role into this ensemble, and their management, through emotional intelligence, can be considered as one of main channels for the expression of possible selves.

Conclusions

After taking into consideration different layers where emotional intelligence may be involved in the definition of the possible, it could be interesting to understand whether a trait EI perspective can be explicitly used as a study approach in the exploration of the possible. A first reflection in the use of this perspective is that trait EI can provide insights in the understanding of the possible, as long as emotional reactions (and individual differences in their expression) are taken into consideration in the study. Differently from other types of individual differences (e.g., in personality traits), research on trait EI indeed constantly showed that this construct can be useful in the understanding of a phenomenon when emotions are an integral part of the variable under study. The manipulation of the emotional reactions in particular seems to emerge as a particularly useful approach to explore how differences in the perception and management of emotions can define alternative performance. Experimentally speaking, it would be, for instance, interesting to understand how the manipulation of emotional phenomena can provide new understanding of possible pasts, possible futures, and possible worlds in relation to individual differences in trait EI. Taking, for example, into consideration possible pasts, it would be curious to manipulate the emotional valence (and arousal) associated to past events in order to understand how the

narrative of the past would change in relation to differences in trait EI. At the same time, it would be interesting to manipulate the emotional meaning of present arrays of information or of the actual behavioral performance and to explore how future performance (through a longitudinal approach) or the imagination of future scenarios would change in relation to the ability to manage these emotional reactions.

The exploration of individual differences in emotional intelligence can therefore open new research avenues in the study of the possible. Even if we are often driven in our daily lives by aggregating forces based on common and shared visions of our time, of our space, and of our identity as members of a group, it may be stated that it is in the small differences between individuals that the possible can flourish. The present entry has offered a vision of how individual differences in the management and use of emotions can define our possible spectrum. A role for future research will be to develop specific experimental paradigms to explore how trait EI is involved in the tightening or in the broadening of this spectrum.

Cross-References

- ▶ [Creativity](#)
- ▶ [Divergent Thinking](#)
- ▶ [Emotion](#)
- ▶ [Foresight](#)
- ▶ [Intelligence](#)
- ▶ [Norms](#)
- ▶ [Risk](#)

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Empathy

Baptiste Barbot ^{1,2}, Poline Simon¹ and Nathalie Nader-Grosbois¹

¹Université Catholique de Louvain, Ottignies-Louvain-la-Neuve, Belgium

²Child Study Center, Yale University, New Haven, CT, USA

Abstract

Empathy is a possibility skill that is critical for social progress and human interactions. It is a nuanced, multifaceted construct that simultaneously refers to a trait and a state, a response, and a process (Cuff et al. 2016). Although defining empathy represents a research topic per se, a common operationalization refers to it as the capacity to place oneself in another's position and understand or feel what that person is experiencing. After an overview of the historical roots of the empathy construct, this entry highlights (1) the dimensions of empathy, (2) the development of empathy, (3) protective and risks factors of empathy development, (4) the measurement of empathy, and (5) methods of prevention and intervention on empathy, with a focus on how encouraging empathy could represent an avenue of transformative change.

Keywords

Affective and cognitive empathy · Theory of mind · Emotion regulation · Social behavior · Social competences · Assessment and training of empathy

Definition

A unified definition of empathy has not been utilized consistently throughout the psychological literature to date. A range of definitions have been proposed, reflecting fundamental variations in conceptualization and operationalization of the construct. For instance, empathy was defined as “the reactions of one individual to the observed experiences of another” (Davis 1983, p. 113), the “understanding of, and identification with, the thoughts, feelings, and motives of another individual” (Hogan 1969, p. 309), or “the process whereby one person tries to understand accurately the subjectivity of another person, without prejudice” (Wispé 1986, p. 320). In a contemporary review, Cuff, Brown, Taylor, and Howat (2016) identified 43 discrete definitions and outlined themes that contrast these conceptualization most saliently, including the dimensions of empathy, its nature as trait or state, or as an automatic versus controlled process. Accordingly, Cuff and colleagues (2016) propose that:

Empathy is an emotional response (affective), dependent upon the interaction between trait capacities and state influences. Empathic processes are automatically elicited but are also shaped by top-down control processes. The resulting emotion is similar to one's perception (directly experienced or imagined) and understanding (cognitive empathy) of the stimulus emotion, with recognition that the source of the emotion is not one's own. (Cuff et al. 2016, p. 150)

After an overview of the historical roots of the empathy construct, this entry highlights (1) the dimensions of empathy, (2) the development of empathy, (3) protective and risks factors of empathy development, (4) the measurement of empathy, and (5) methods of intervention on empathy, which beyond “treating” an empathy deficit could cultivate the possible by augmenting our understating of the world and each other.

Empathy as a Psychological Construct: Origins and Salient Dimensions

The roots of the term empathy trace back to the ancient Greek *empathia* (“in passion”), but its use in the psychological literature is rather recent.

It initially appears in the early twentieth century (e.g., Lipps 1903; Titchener 1909), upon an adaptation of the German term *Einfühlung* (“*feeling into*”) in the fields of Aesthetics and the Arts and coined by Vischer (1873) – a German Art Historian and Philosopher – describing the perception of the subjective qualities in an object, specifically through the projection of the self onto the object. Despite these early uses of the term, Wispé (1986) notes that until the 1980s, the terms empathy, sympathy, or compassion are used interchangeably in the psychological jargon and they have only progressively differentiated from each other since then. One exception was the Rogerian use of the term empathy that emphasized the need for the therapist to try to “live the attitudes of the other” (Rogers 1951, p. 29). While definitionally still challenging to parse out from sympathy and related constructs, a contemporary review of the term (Cuff et al. 2016) identified eight salient themes relating to the nature of empathy across distinct definitions, according to whether (1) they explicitly refer to a distinction of empathy with other related constructs (e.g., sympathy), (2) the components of empathy referred to (e.g., cognitive or affective), (3) the notion of congruency or (incongruency) of emotions elicited in the observer, (4) the impact of external stimuli (e.g., does emotional state of another needs to be explicitly observed or can it be evoked by mere imagination), (5) the distinction between the self and other’s emotional awareness (much empathy research has overlooked that the individual has to recognize that the perceived emotions are separate from the self), (6) its nature as a trait or as a state (i.e., empathy as trait is viewed as a stable capacity, whereas state empathy is viewed as an ability influenced by situational factors), (7) empathy requires a behavioral response rather than recognition, and (8) empathy is an automatic experience or one that is subject to intentional control.

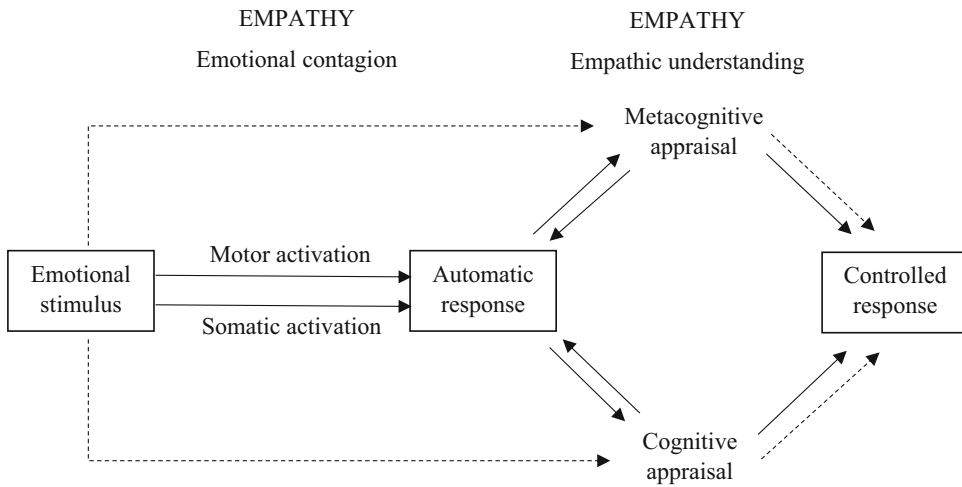
Despite these numerous facets of the construct of empathy identified by Cuff et al. (2016), one of the most common way to operationalize it focuses essentially on the dimensions of empathy and mainly distinguishes cognitive and affective empathy, also coined “dual system” (e.g.,

Shamay-Tsoory et al. 2009). Cognitive empathy comprises of a variety of cognitive processes, all of which contribute to the ability to understand another’s mental state and/or take another’s perspective (for review and neurological underpinning, see Decety and Jackson 2004), that is, perspective taking (“the ability to construct a working model of the emotional states of others” (Reniers et al. 2011, p. 85). In contrast, affective empathy (or emotional empathy) refers to the capacity of being affected by other’s emotional state (that is, emotion contagion) and respond with appropriate emotions to those states (Shamay-Tsoory et al. 2009).

In a recent operationalization, Heyes (2018) articulates both systems to explain the empathic response (Fig. 1; see also Keefe 1976). In her dual-system model, the first system (affective empathy) operates automatically and unconsciously by a motor and/or somatic activation due to an emotional stimulus. This activation causes behavioral and/or physiological changes leading the person to experience an emotional state close to the one he/she observed. These automatic changes trigger the second system called cognitive empathy, which is more conscious and implies controlled processing, such as mindreading, or cognitive and metacognitive appraisal (e.g., the agent conscientiously conceptualizes himself to be in the same emotional state as the target). This processing allows the person to understand what causes the situation and the emotional state felt by others, and also to modulate a controlled response, by reducing or amplifying it, or by displaying prosocial versus antisocial behavior, that may help/comfort or disturb/upset the other (Fig. 1).

The Development of Empathy: Models and Correlates

An influential developmental theory of empathy is Hoffman (2000)’s model of empathy and moral development. According to this model, the development of empathy progresses in five stages. The first stage corresponds to “newborn reactive cry” which develops until 6 months. At this stage,



Empathy, Fig. 1 Dual system model of empathy. (After Heyes 2018)

when the newborn hears another baby crying, he reacts by crying. This reaction is not a simple vocal mimicry but denotes a real affective component. During the second stage called “egocentric empathic distress” which lasts until the end of the first year of life, the infant responds to other’s distress with expressions such as making a sad face or crying, and he may feel distressed himself. However, he attempts to reduce his own distress with behaviors such as taking his security blanket or seeking comfort from his parents. At the beginning of the second year, comes the “quasi-egocentric empathic distress” stage. The toddler understands that the other is in distress, he feels it, and may attempt to comfort or help the target by displaying behaviors that may typically be useful to overcome his own distress, but that may not be adapted to address the target’s distress (e.g., the toddler gives his security blanket to another child). The fourth stage, “veridical empathic distress,” develops from the end of the second year, when the toddler understands what people feel and that his internal state is distinct from others’ internal state. He is also able to take the perspective of others. Accordingly, he can adapt his behavior to the perceived needs of the distressed target. The last stage is coined “empathic distress beyond the situation.” Between age 5 and 8 years old, children can understand that people feel emotions in general contexts of life and not only in the

immediate situation. They can empathize in reaction to sad life conditions (e.g., feeling sad for homeless people). Over time, as children’ understanding of emotions becomes more complex, they can empathize and better react in response to others’ distress. This developmental model is focused on empathy toward distress, because Hoffman (2000) conceptualized it in a progression of moral judgment in which negative emotions are particularly considered. However, empathy could also address positive emotions, such as happiness (Sallquist et al. 2009).

Several studies have investigated the role of empathy in children’s emotional and social development. Empathic skills favor prosocial behavior from early age (Zahn-Waxler et al. 1992a) and cooperation with peers at preschool age (Jolliffe and Farrington 2006b; Zahn-Waxler et al. 1992a). Empathy is also positively linked with emotion regulation (Lucas-Molina et al. 2018) and higher-level of moral reasoning (Eisenberg et al. 1991). In adolescence, better affective empathy skills lead to constructive problem solving in conflict contexts (de Wied et al. 2007), whereas better cognitive empathy skills help to improve friendship quality (Chakrabarti et al. 2006). Conversely, poor empathic skills were identified as risk factors for proactive aggression in school-aged children (Deschamps et al. 2018) and adolescents (LeSure-Lester 2000).

Other studies reported that empathy and Theory of Mind (ToM), defined as the understanding of own and other's mental states (Flavell 1999), are positively linked (e.g., Wang and Wang 2016; Eisenberg et al. 2006), as they develop simultaneously and recruit common brain regions (Decety 2010; Dvash and Shamay-Tsoory 2014). However, there are some controversies as to whether empathy, especially cognitive empathy, and ToM correspond to the same (e.g., Blair 2005) or distinct constructs (e.g., Wang and Wang 2016). When considering the latter, it remains unclear which construct is antecedent to the other. In fact, it is likely that the nature of this relationship is bidirectional. For instance, in studies focused on the adolescent years, it was both observed that empathy predicts ToM and that ToM predicts empathy (Aliakbari et al. 2013). However, as these studies are cross-sectional, no inferences on causal link and directionality can be made, and more studies are needed to decipher the nature of the relationship between these constructs. Moreover, the relation between empathy and specific mental state related to ToM, such as thought and desire, should be investigated.

Protective and Risk Factors in Empathy Development

In order to identify factors that could be the best targets for intervention, it is essential to examine the factors that contribute to empathy's "natural" development. Further, in contrast to stable factors on which it is challenging to act, there are some more state-like and malleable factors that are more prone to intervention. In typically developing children, stable individual factors include genetic factors (Warrier et al. 2018), gender (Zahn-Waxler et al. 1992b), or temperament. Among more malleable factors, language is a predictive factor of empathy (Rhee et al. 2013) on which interventions can be useful. Family factors, which are the most studied factors, include attachment relationship (Futh et al. 2008; Kestenbaum et al. 1989; Stern and Cassidy 2018), emotional expressiveness of parents (Zhou et al. 2002), parental strategies of emotions socialization (Taylor et al.

2013), in particular conversations about emotions with the child (Brown and Dunn 1991; Dunn et al. 1987), educational style (Miller et al. 1989), and the child's relationship with siblings (Brown and Dunn 1992).

Among risk factors leading to potential deficits in empathy, there are several psychopathological diagnoses and developmental disorders, including autistic spectrum disorder (ASD), conduct disorders (CD), or intellectual disabilities. Specifically, according to the empathy imbalance theory (Smith 2006, 2009), individuals with ASD present deficit in cognitive empathy and an intact affective empathy, while the reverse is observed in individuals with CD, that is, a deficit in affective empathy and an intact cognitive empathy. Future research on non-typically developing populations could further help nuance functional and developmental processes at play in empathy and support the development of intervention guidelines.

Measures

To study empathy and better monitor the effect of empathy prevention and intervention programs, a range of measurement methods were developed, including observational methods, performance-based, or other-reported and self-reported questionnaires that may be more or less adapted to the study population of interest depending on their developmental level. For infancy and early childhood age, standardized situations are commonly set up to elicit empathic reactions. For example, the experimenter or the mother feign to hurt himself or herself (Zahn-Waxler et al. 1992a), to feel sick (Sigman et al. 1992), or to receive a present (Sallquist et al. 2009) without prompting the child to respond. Spontaneous empathic reactions of the child (e.g., verbal or physical comfort, help, giving advice, facial, or verbal expressions demonstrating concern) are noted by using an observational coding grid to obtain an empathic score.

Empathy in preschoolers and schoolers is often assessed by performance-based measures eliciting the child responses to short stories illustrating situations designed to induce emotions, such as

happiness, anger, sadness, and fear (Bensalah et al. 2016). After each story, the child has to answer questions tapping into different components of empathy such as: (a) comprehension (e.g., “*What’s happened to the character?*”); (b) questions about how the child is feeling (to evaluate affective empathy); and (c) questions prompting the child to explain why he feels such emotion (to evaluate cognitive empathy). The measure conceived by Bensalah et al. (2016) evaluates also prosocial behaviors (e.g., give an object, play, help, tell joke) in different situations in which the target feels positive or negative emotions, by asking the child “*What would you do if you were next to the little boy/girl?*”

With other-reported questionnaires, parents and/or teachers rate their perception of their children’s or adolescents’ empathy abilities in daily life. The *Empathy questionnaire* (EmQue, Rieffe et al. 2010), targeting infants and preschoolers (from 1 to 5 years old), gives a global score of empathy as well as scores corresponding to the first developmental levels of Hoffman’s model, namely “emotion contagion,” “attention to other’s feelings,” and “prosocial actions.” For preschoolers, the *Dispositional Positive Empathy Scales* (DPES; Sallquist et al. 2009) and *Empathy and Theory of Mind Scales* (EToMS; Wang and Wang 2016) also offer a global empathy score. *Griffith Empathy Measure* (GEM; Dadds et al. 2012) yields a cognitive and affective empathy score, as well as a global score, and is adapted for children from 4 to 16 years old.

Self-reported questionnaires may be completed by individuals from late childhood to adulthood and refer to their own empathic skills in daily life. The majority of these questionnaires measure distinctly affective and cognitive empathy and often yield a global empathy score (e.g., *Basic Empathy Scale*; Jolliffe and Farrington 2006a). Some instruments include additional scales such as a “prosocial motivation” scale in the *Empathy Questionnaire for Children and Adolescent* (EmQue-CA; Overgaauw et al. 2017), or a sympathy scale in the *Adolescent Measure of Empathy and Sympathy* (AMES; Vossen et al. 2015). These scales, together with recent developments in empathy measures,

could support new research furthering the analysis of profiles of empathy across different periods of life and help monitor progress under the effect of intervention programs more closely and distinctively.

Interventions

Empathy expands the array of possibilities we are endowed with to understand other people. As illustrated above through the presentation of a developmental model of empathy (Hoffman 2000), empathy is not a static entity, and it can therefore be nurtured or trained to address empathy difficulties in children at risk to develop behavior disorders or with autism spectrum disorder. However, with an increased understanding of the underlying mechanism of change used by empathy trainings and interventions, empathy programs could be applied more broadly as a way to cultivate this possibility skill. The same way skills like cooperation, creativity, or critical thinking have been targeted as “21st century skills” to be nurtured and developed (Trilling and Fadel 2012), schools could encourage empathy as fundamental possibility skill which contributes to augmenting our understanding of the world and of each other. Indeed, contemporary beliefs suggest that, in our modern information society, people are becoming less empathetic than previous generations (e.g., Borba 2017), in a context of technologization of human relationships, and increased mistrust and hostility (e.g., new forms of harassment and bullying). Hence, encouraging empathy beyond “treating” an empathy deficit could represent an avenue of transformative change.

Before such broader applications be considered, understanding the main features of effective empathy interventions is pivotal. Several kinds of interventions targeting children from early childhood to adolescence exist, including school-based, parenting-based, and experimental programs. Transversally, empathy trainings are more effective earlier in children development to promote social emotional competences (Malti et al. 2016).

In school-based programs, different constructs such as empathy, perspective taking, emotion understanding, and prosocial behavior are trained in classroom settings. However, none of these training programs focused only on empathy (for a review, see Malti et al. 2016). For example, *Second Step* (Frey et al. 2000) proposes lessons on identifying and understanding emotions in self and others, considering others' perspective and responding emotionally to others. To promote these competences, teachers or external speakers teach children to recognize physical, facial, and verbal cues related to emotions, interpret emotional expressions, and acknowledge different perspectives and reactions in social situations (Frey et al. 2000). Different strategies and materials are used in these kinds of lessons such as reinforcement, sharing personal experience, stories, videotapes, pictures, discussion, and role-play (Bierman et al. 2010; Frey et al. 2005). Results of studies testing such programs showed improvements in empathy, social emotional skills, and prosocial behavior (Low et al. 2015) and a decrease of behaviors disorders (Malti et al. 2016).

Parenting programs are developed to support mothers and fathers' competences, and, in turn, to promote indirectly emotion regulation, empathy, and prosocial behaviors in children (Havighurst and Harley 2007). For example, *Tuning into Kids* (Havighurst and Harley 2007) teaches parents to recognize children's positive behaviors, to change their beliefs and behaviors toward emotion to create more emotional connection with their children, and to stimulate children's language and knowledge about emotion. To do this, lessons are based on emotional coaching (Gottman et al. 1996) and train parents using videotapes, role-play, personal experiences, diverse exercises, and principles of psychoeducation (Havighurst and Harley 2007).

Finally, experimental training program of empathy refer to innovative methods to improve empathy, such as a recent line of programs using Immersive Virtual Reality (IVR) technology. One of the feature of IVR is that it elicits embodiment, through which the user literally experiences the perspective of someone else (Puvirajah and Calandra 2015; Shin 2018) to the extent that the other's body (i.e., avatar) is being experienced as

being their own (Maselli and Slater 2013; Petkova and Ehrsson 2008). This experience resembles cognitive empathy (e.g., providing the experience of another's perspective) and can therefore be encouraged through enhanced simulation programs using IVR. In this line, Herrera et al. (2018) showed that actual empathic response (here, helpful initiatives toward the homeless) was larger using an IVR perspective-taking program compared to less immersive perspective-taking conditions. Further, IVR can be used to simulate situations that trigger emotional responses (i.e., involving content scenario such as homelessness, or racial prejudice), leveraging the likelihood of an empathetic response. For instance, Shin (2018) used an immersive storytelling approach to bolster empathy and highlighted the role of high quality and relevant content to do so. Hence, by supporting both cognitive and emotional processes involved in empathy, together with other mechanisms (for a review, see Barbot and Kaufman 2020), IVR has the potential to elicit empathetic response in real life (Herrera et al. 2018) at a point that it has been touted as "ultimate empathy machine" (Milk 2015). As outlined above, using this empathy machine as a prevention rather than intervention tool represents a promising direction to cultivate the possible within self and society.

Conclusions

"Empathy is the binding substance of the human relationship by which people transmit their culture, their humanity" (Keefe 1976, p. 10). However, contemporary beliefs suggest that, in our modern information society, people are becoming less empathetic than the generations before them (e.g., Borba 2017). Hence, it becomes increasingly critical to understand the nature of empathy, its development, and ways to nurture it. While offering an overview of these important issues, this entry outlined a few important directions for future research in this field. They include, but are not limited to, (1) furthering the analysis of individual's profiles of empathy (i.e., accounting for the multidimensional nature of the construct), which supposes (2) the development of age-

appropriate measures that account for this dimensionality and which will also (3) help track more comprehensively the “natural” development of empathy, as well as (4) change in empathy in response to prevention and interventions programs. With respect to the latter, (5) development of IVR-based programs shows great promise for the generations to come (likely to increasingly adopt IVR technology). More broadly, (6) further longitudinal studies of (multidimensional) empathy are needed to decipher causal link and directional inferences on the relationship between the empathy facets, so that its developmental dynamic can be better understood, and strategies of prevention and interventions developed accordingly. All together, these efforts will contribute to a better understanding of empathy’s nature (e.g., solidify a unified definition), its development and nurture, as a fundamental possibility skill.

Cross-References

- Aesthetics
- Avatars
- Emotion
- Perspective-Taking
- Theory of Mind
- Virtual Reality

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Empowerment

Ximena Amariles-González¹, María Eugenia Morales¹, Yeison Meneses-Copete² and Zayda Sierra¹

¹Universidad de Antioquia, Antioquia, Colombia

²Université de Perpignan, Perpignan, France

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Definition

Power, understood as the control over material goods, intellectual resources, and ideology, is a central debate in political and social sciences. In the context of the Global South, discussing power cannot be separated from a strong critique of the Anglo-European hegemony established during

the conquest and colonization of Africa, America, and Asia beginning in the fifteenth century and continuing to the neoliberal economies of today. The concept of *empowerment* emerged consequently as an essential constituent of diverse political and pedagogical agendas from oppressed and colonized groups to create alternative possibilities of existence for building projects of democracy and citizenship. Any such analysis reflects the multiple and diverse layers, related to the many conflicts, tensions, possibilities, and hopes that are distinct to the Global South. In this chapter, we will refer to the long history of *disempowerment* for diverse populations of the Global South through racial classification, slavery, territorial dispossession, and colonialism, a *coloniality matrix* that persists up to today. At the same time, we want to highlight the diverse social movements against colonialist oppression and creative search for *emancipation* and *self-empowerment*. There are several ancestral and contemporary resistances, resiliencies, and re-existences emerging around the Global South to recover and recreate powers toward a full realization of a good living; this is to say, having the spiritual and material resources for enhancing life conditions according to diverse cultural backgrounds, cosmovisions, and philosophies. At the end, we will share how some of these experiences have nurtured our own educational *praxis*, giving us the strength to keep dreaming and working for a world full of positive possibilities for all.

Dis-Empowerment in the Global South

The modern history of most populations from the Global South reflects a long and tragic story of *disempowerment* that encompasses the domination and oppression of diverse groups of people through territorial dispossession and enslavement. This in turn resulted in the denial of people's cosmogonies and knowledge alongside a narrative of nonhistory leading to political disenfranchisement, the destruction of local economic structures, and, in general, the deprivation of the material and symbolic enjoyment of their existence. In alignment with Santos (2012), we

understand "the South" as a destination and a condition. It is constituted by social groups and populations who have systematically suffered injustice, oppression, and destruction related to capitalism, colonialism, and patriarchy imposed in the southern hemisphere. This also means acknowledging the existence of "a South in the North," which are the oppressed and marginalized groups in Europe and North America, as well as "a North in the South," made up of local elites who favor neo/colonialist powers that benefit from global capitalism.

The path toward the disempowerment of people in the South began with the colonial discursive invention of Africa, Asia, Oceania, America, and the Caribbean as "a new World," whose territories and inhabitants were depicted as savage, underdeveloped, and primitive, and juxtaposed against the notion of emerging modern Western Europe as the superior and universal civilization model to be followed (Thiongio 1981, 2017; Mudimbe 1988). This superiority/inferiority binary unleashed harsh dysfunctions against humanity, such as the right to conquer, enslave, colonize, and exploit entire territories and people, breaking communitarian ties, collective property, and non-vertical forms of governance, imposing an hegemonic power that profits from extractive economies to the modern day (Kame'eleihiwa 1992; Sing'Oei 2007; Salas 2018).

A modern and capitalist Eurocentric system based on the constitutive idea of "race, sex, and class" emerged as an instrument of classification and social control (Rodney 1982; Fanon 2011). It became embedded in a patriarchal system inherited from antiquity and consolidated century after century by different powers in Christian Europe (Varela 2005). Thus, the colonial and modern episteme can be described as an ongoing ideological process, grounded in the notion of one race, one sex, and one class as the "superior" and "universal" one: male, white, and paterfamilias, functionally, heterosexual, owner, and law maker (Segato 2011; Sierra and Amariles 2021).

As Aimé Césaire (2000) has stated, colonialism dehumanizes the colonizer and the colonized. The former colonies, then the new republics or nation-states, employed narratives of freedom and

independence in the name of a plural society. But once independence was achieved, the colonialist, patriarchal, exploitative, racist, sexist, and segregationist structures were merely reedited and reproduced, giving continuity to segregation and oppression. Although most of the emerging republics based their new government policies on revolutionary postulates such as the prohibition of human trafficking and enslavement and the nonexpropriation of communal territories through the installation of neocolonial administrative models, extractive economic patterns, private land property, centralized educational systems, and an imposed unique religion and language, there was no room for the polyphony that had been fought for to develop independence and freedom. What emerged was an elite “North in the South,” constituted by heirs of *imagined whiteness* that maintained privileges in the access to education, and a disproportionate share of resources, while racialized and marginalized populations remained deprived of access to opportunities of schooling, land, and resources. This in turn laid the foundations of multiple social disparities and armed violence of today.

A racist, sexist, and classist educational model persists in the Global South despite glimpses of social and educational transformation resulting from various emancipatory social movements during the twentieth century. Movements that have not been vigorous enough to *decolonizing the mind* understood as the constant critical, transgressive, and insubordinate viewpoints and ethics toward transforming colonialist and exploitive power relationships in all aspects of life: institutions, cultures, knowledges, values, aesthetics, languages, religions, and ontologies, among others (Thiong'o, 1981; Lander 2000; Mbembe 2016; Kgatla 2018).

The Coloniality Matrix

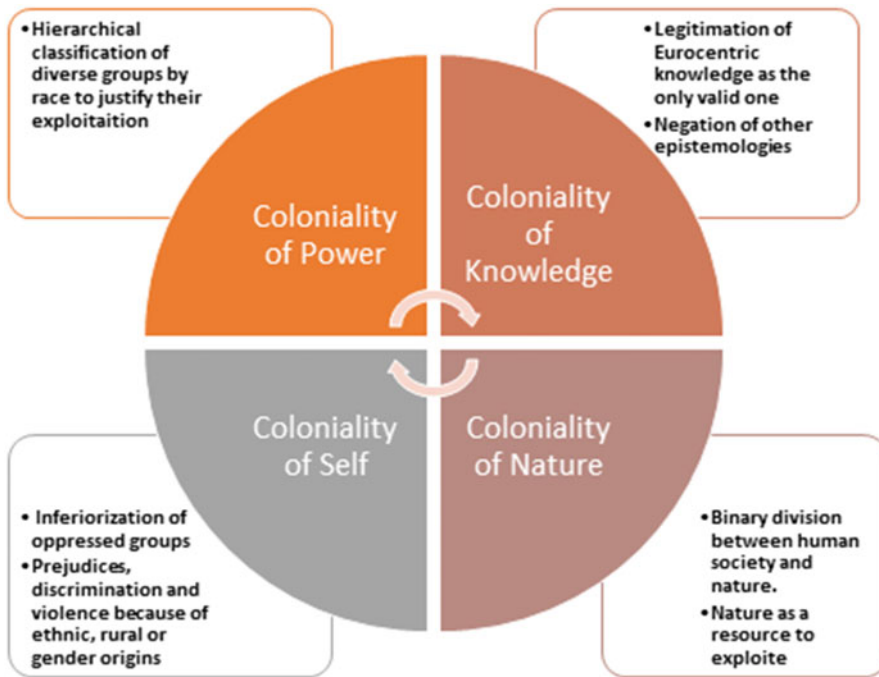
There are not words to describe how colonialism and capitalism, hand in hand with all their exploitive and dehumanizing heritage, have affected the life of millions of women, men, and children in the Global South. How to honor in this short space

the diverse voices that have denounced and keep denouncing this insanity? How to give account of the enormous tensions and contradictions but also the solidary similarities across the varied different interpretations, action research, and studies (post-colonial, decolonial, subaltern, anti-racist, anti-colonial, feminists, African, Asian, Latino, Indigenous, and Mestizo, among others)? There is an ongoing critical dialogue on all these different approaches, but it goes beyond the purpose of this chapter to describe it. Just to give a glimpse of the complex discussions contrasting perspectives see Adichie 2009; Bhambra 2014; Asher 2017; Ndlovu-Gatsheni 2020.

Nevertheless, we consider Walsh's (2012) description of *the coloniality matrix* very useful here to explain the complex process of colonialist disempowerment. It offers a comprehensive route to understand the interconnectedness of coloniality's main axes: the coloniality of power, knowledge, being, and nature (see Graphic 1).

The *coloniality of power* refers to the establishment of a system of social classification and exploitation of labor based on a hierarchical racialized division, with the Europeanized male at the top. The *coloniality of knowledge* positions Eurocentrism as the exclusive order of reason, knowledge, and thought, discarding and disqualifying existence and viability of other epistemic rationalities or cosmovisions. We understand cosmovision as a particular way to see the world and to give an order to the cosmos and universe, considering as reference diverse communities' comprehensions of culture or people, their historical dimensions, imaginaries, representations, and practices. Subsequently, cosmovision is closely associated to the ways indigenous, Afro-descendent, and peasant peoples from the Global South comprehend and live in the territory, a vital space that assures their survival as peoples in a very deep interdependency to nature, humanity, and spirituality (Estermann 2021; Quintari and Quiñonesii 2016; Escobar 2016).

The *coloniality of being* is exercised through inferiorization, subalternization, and dehumanization of beings who, because of their skin color and ancestral non-Christian roots, are considered lacking soul and reason. Finally, the *coloniality*



Empowerment, Graphic 1 The coloniality matrix, own graphic from Walsh (2012)

of nature refers to the binary division nature/society from which exploitation and control of nature is justified, denying cosmovisions that see it as the mother of all beings (Walsh 2012). For a further discussion on how this division nature/science emerged in modern sciences, as well as a critique to the gender/science system, see Keller (1991) and Harding (2000). On the inextricable connection of the mother earth's conception with the language culture and territory of Indigenous people, see Green (2011).

The coloniality matrix requires also an intersectional perspective to understand how socially and culturally constructed categories such as race/ethnicity, social class, or gender function in an interrelated and interdependent way. *Intersectionality* is a conceptual category developed by the African-American feminist Kimberlé Crenshaw (1989) referring to the experience of multiple discriminations suffered by African-American women in both the African-American and feminist movement. Hence, the relevance of the notion of *coloniality of gender*. This concept was put forward by Latin American feminists

such as María Lugones (2008), acknowledging the multiple oppressions that are generated and reproduced by the modernity/coloniality system, in which gender and race are instruments of power that intersect one other.

Deconstructing Colonialism and Coloniality

While colonization supposes an imperialistic and structural domination including violent undertones over a large heterogeneity of people (Mohanty 2008), coloniality can be defined as the capability of power structures to survive the demise of the underlying juridical administrative processes and so evading the fundamental changes desired by anti-systemic movements. Colonialism keeps influencing all aspects of the lives of its colonized subjects, including their ways of knowing, seeing, and imagining the world (Ndlovu 2018). Decoloniality stands therefore as a pedagogical, political, cultural, and epistemic project that aims to deconstruct *the*

coloniality matrix of power, knowledge, being, and nature. It emphasizes the constant creative process of unveiling historical oppressions and exploitation among humans, and the depletion of the natural world, to rethink alternative ways of existing in the planet (Walsh 2013).

Postcolonial studies offer theoretical foundations that contribute to comprehend power and empowerment from the Global South. They do not merely state a temporary differentiation and disruption between colonization and independence, but they propose a clear stance on the role of colonization and imperialism in the imposition of the reality we have today. Above all, postcolonialism establishes a plural perspective from the South toward the construction of modernity and history. That is to say, modernity not as a lineal Eurocentric narrative, but as a complex construction in several places of the world. It encompasses the idea of critically moving from history to histories, interrogating universality and homogeneity. Following this process postcolonial studies highlight the sense of place of the subjects from the Global South: How their *insurreccional capacities* take a more decisive place in global narratives (Mezzadra 2008)?

Both postcolonialist and decoloniality critiques invite us to *transform the coloniality of knowledge* in the following ways. First, through disassembling the deep Eurocentric knowledge structures, which are hegemonic within the education “national” systems of the South. Second, *transforming the coloniality of power* by disrupting monopoly powers over land ownership that would strengthen social organizations to encourage the participation of each society member in political decision-making. Third, *transforming the coloniality of being* by finding innovative ways of educating individuals and social groups to confront the oppression of patriarchy and racism that persists in society, recognizing the challenges that such a pedagogical process might be (Martinez 2014; Viveros 2019). Finally, transforming the *coloniality of nature* means fighting against predatory extractive economies, questioning the vision of nature as a resource to be exploited, acknowledging cosmovisions that do not separate humans from

nature, and instead, recognizing nature as a subject of rights (Ebus 2017; Laastad 2019).

Educational Experiences Toward Empowerment from the South

An ethical-political perspective on “empowerment” from the Global South means transforming power structures that exploit people and the natural environment to recognize the inhabitants from the South as subjects and not objects of history. Thus, *Surear* or “Southering” means creating pedagogical and educational possibilities to reconstruct society members to transform colonialist realities for the defense of a caring of life (Espinosa and Calderón 2020). It means learning from communitarian and resistance experiences recreated in the South, to problematize unjust realities and envisage a genuine, humanistic world.

Today, we can find several transformative educational efforts to change oppressive realities and create alternatives away from the coloniality matrix. Just to mention a few: *Pedagogies of Re-existence* (Achinte 2009); *Insubordinate Pedagogies* (Medina 2015), and *Education for a Possible World* (Santos and Meneses 2018). They have in common building the power in search of a good living for all. A good living differs from consumerist perspectives; instead, it is related to what Andean Indigenous communities understand as “Sumak Kawsay” or “*Buen Vivir*” (Living Well) (Kowii 2018), the Colombian Pacific African diaspora in Chocó as “*Vivir Sabroso*” (Living in harmony with nature, spirits, and human beings) (Quiceno 2016; Mena and Meneses 2019) or the Peasant Mestizo movement as “*Vivir con dignidad*” (The right to live in dignity) (La Vía Campesina, in Hubert 2019).

Following, we will share briefly our own educational practices, which have been nurtured by these different discussions and perspectives:

1. Ximena Amariles’ (2020) project “*A face with different voices. Contributions of peasant women to a critical intercultural pedagogy*” aimed to understand the complex interweaving

that connects coloniality with patriarchy through the narratives of peasant women who belong to the Association of Peasant Women of Rionegro (Así Mujer), a municipality in eastern Antioquia, Colombia. The linking of women to the organization since 2010 has become a political educational process that has contributed to recognizing other ways of understanding and inhabiting the world, based on the voices of peasant women as a central axis and mobilizer of other possible realities – not oppressive ones – by the construction *from below and from inside*, the dialogue of knowledge, the strengthening of unity between women, and the generation of solidarity to contribute to the good life of both women and peasant territories. This local experience is part of a larger dialogue with other feminist movements such as the Popular Education Network among Women from Latin America and the Caribbean – Red de Educación Popular entre Mujeres de América Latina y el Caribe (REPEM) and the Rebellion Scarves (Pañuelos de Rebeldía). These scenarios enhance feminist popular education work for the promotion of gender equality and equity, the exercise of citizenship and human rights, and the political, social, economic, and cultural participation of women in all aspects of society (Torres et al. 2010; Arana and Rapacci 2013).

2. María Eugenia Morales (2019)'s participative action research was aimed to make visible Afro-descendent women's own political, educational, and resistance processes and their demand for rights within a very racist, classist, and sexist society, and also to reveal how Afro-descendant women's ancestral political practices have served their own people and society in general, thus reinforcing interculturality. Her study was based on a former project for the creation of the first trade union of Afro-Colombian women domestic workers. It included an anti-racist and anti-patriarchal analysis of society to explore the problematization of a racialized systemic structure that intersects the conditions of sex, gender, class, and race imposed on the bodies of Afro-Colombian women (Morales et al. 2013). As a result, this organizational process has impacted very positively on these women's personal and community lives, particularly the recognition and appreciation of their Afro-descendant identity, knowledge, and culture.
3. Despite the conditions of subjugation and marginalization, Afro-Colombian women have developed very creative pedagogical and educational strategies for organizing themselves through the historical figure of *marronage*. *Marronage* implies cultivating solidarity, applying extended family values, and strengthening affective ties to help and offer hospitality to each other. It has contributed to make visible how Afro-descendent women in domestic works recreate, negotiate, and teach their own ancestral knowledge about food, values, upbringing, dance, music, and language to the families they work for. This organizational process contributed to participants' own recognition of their own strengths and agency for entrepreneurship and empowerment, what Arboleda (2016) calls the *intimate sufficiency*, how each human collective and person possess the capacity to create and to imagine; therefore, they have the basis to build and exercise power.
3. Yeison Meneses's (2020) research work entitled: "El río sigue siendo el río" (The river continues to be the river). "Childhood and intersectional resiliences: *des/obligamientos* in the state of Chocó, Colombia, 1991-2020" was oriented to the comprehension of the intersectional resilience processes in children, girls and boys, who have been *des/obligados* (uprooted, as forced displacement survivors) by the armed conflict taking place in the state of Chocó, Colombia, during the last three decades. Meneses's main effort was to present the *des/obligados* not merely as victims but as historical, intellectual, creative, and empowered people. He analyzes the intersectional resilience's processes: collective and individual strategies, psychological conditions, familiar surroundings, educational environment and support networks, communitarian values, cultural backgrounds, creative developments, and recreational and playful dynamics built and developed by children to face the

appalling effects caused by war. Also, how these children *represent* and overcome traumatic experiences, and restart life with hope, enthusiasm, joy, dreams, and future expectations. Meneses (2020) found that the intersectional resilience processes relied on local people's philosophical foundations from their strong relationship with the river and nature, cultural backgrounds, and identity. Alongside this, teachers' pedagogical engagement with social problems relating to the effects of armed conflict and drug trafficking led to the importance of family practices of caring.

To comprehend the dimensions of the role of education and pedagogy in the process of resilience development, the author considered other educational and pedagogical experiences from ethnic-racial and plurilingual perspectives in Colombia. These have grown in territories historically affected by the dominant extractive economic model, the armed conflict, the multidimensional impoverishment, and the social inequalities that highlight the consequences of systematic racism (Múnera 1998a, b). These ethnic educational initiatives are built from the challenges that children born in this biodiverse territory face challenging dangerous experiences when getting to school by swimming across rivers, walking long distances across farms, forests and paddocks, or riding horses when they might encounter armed actors and antipersonnel mines. However, despite the war and displacement adversity, from a very early age, girls and boys develop strong capacities and creative agencies to face life's experiences and opportunities. Thus, the pedagogical initiatives based on the *des/obligados* resistance are seeds of hope and environments of possibilities to foster critical thinking, feelings of belonging, developing solidarity, and strengthening collective thinking, which both question and defy the impositions of capitalist individualism.

4. As described elsewhere (Sierra et al. 2021), the absence of higher education programs relevant to the diverse social, cultural, and environmental rural contexts has led new generations of

rural youth to migrate to cities in search of postsecondary studies and sources of employment in order to finally leave their territories. Education in rural contexts, from a decolonial perspective, can serve to identify and address the different factors that render vulnerable rural communities' rights to live with dignity and challenge the historical causes of social injustice and discrimination. Coauthor Zayda Sierra has been working with other colleagues since 2012 to develop an undergraduate program in *Pedagogy in Rurality and Peace*, to be formally offered by the Faculties of Education and Public Health at Universidad de Antioquia in 2021. With the participation of social leaders, men and women, young and elders, issues relevant to their contexts have been identified, as well as objectives, themes, and guiding questions, reflecting their personal, family, community, and territorial life. A main issue is how participants' different personal interests and common topics might contribute to build and enhance communitarian life projects, promoting participants' capacity for action across different political possibilities, not as passive subjects or mere recipients, but as creators of their own reality.

Some Concluding Remarks

We discussed empowerment as a way forward for society members to decide and make possible a positive future across both the personal and the collective through communitarian, territorial, educational, cultural, and environmental projects. These projects are necessary to go beyond the historical circumstances that have driven a vast majority of the population in the Global South to a situation of disempowerment. The coloniality matrix helps to explain how the economic and political elites have been historically perpetuating their practices through the appropriation of natural resources, imposition of hegemonic knowledge, authoritarianism, and the militarization of society, which in turn has produced discrimination and violence grounded in ethnic, racial, cultural, and gender identities.

However, we must not only look at the dehumanizing construction and invention of the “loss of power or agency” through such prejudiced and discriminatory practices, but also at historical and creative resistances and re-existences. Across all latitudes, we can find numerous emancipatory and liberating pedagogical processes toward empowerment oriented to the reconstruction, recovering, and recreation of *other* cosmogonies and cosmovisions, other ways of seeing and inhabiting the world. These are all educational projects that go outside the four walls of schools to find solutions to the sociocultural challenges each community faces.

To sum up, “the world of possible” implies acknowledging empowerment as part of diverse individual and collective human efforts toward imagining and creating other notions of power grounded in affection, hope, love, joy, and spirituality. This entails building collaborative and solidary initiatives for decolonizing and depatriarchalizing society and so transforming predatory and extractive practices to recognize nature’s rights for a balanced relationship between humans and the natural environment.

Cross-References

- [Pedagogies of the Possible](#)
- [Possible in Education](#)

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Entrepreneurship

Laurice Alexandre
CEPED, Université de Paris, Paris, France

Abstract

Entrepreneurship is a French word which describes the action of undertaking a venture. However, the concept of entrepreneurship is being expressed in other words such as small business. The concept is part of a multi-disciplinary approach: economy, management, psychology, sociology, geography, gender, and education. While the entrepreneur of the sixteenth or eighteenth century was considered as an industrial, an innovator, or a manager,

today the entrepreneur should play a large social and economic role and most of all create jobs. This is in light with Drucker's (1985) definition "*entrepreneurship is the act that endows resources with a new capacity to create wealth.*" Research on entrepreneurship have started with Insudtrials, Economics, and Researchers but gained a lot of interest in Management from the 1970s. Many topics have been addressed such as: the psychological profile, the opportunity concept, the entrepreneurial intention, internationalization, education, business model, intrapreneurship, social and responsible entrepreneurship, gender, and so on.

Keywords

Entrepreneurship · Economics · Management · Research · Process · Opportunity

Introduction

Entrepreneurship is at the heart of the transformation of industrial society and covers varied realities: from the individual who creates a company to escape unemployment, the innovator whose name becomes synonymous with the product he invented and marketed, to large companies that initiated intrapreneurship (Boutillier 2017). The chapter will be articulated around the history of entrepreneurship, entrepreneurship in Economics and Management, research in entrepreneurship, and possible fields to be explored.

A Brief History of Entrepreneurship

Entrepreneurship is not a new concept. According to the legacy of the ancient, Romans stands in stark contrast to that of the enterprising Mesopotamians and Phoenicians. A tribe of "middlemen and merchants" transformed a small strip of land in modern-day Lebanon into the hub of intercontinental trade. Considered one of the ancient world's most entrepreneurial and inventive cultures, the merchant-sailors of Phoenicia connected Africa, Europe, and Asia Minor into a

network of trade so vast and profitable that their success was marveled at by Ezekiel and other authors of the Old Testament (Carlen 2016).

So, the Middle East and Mediterranean Europe were the settings of most of the significant developments in the early history of entrepreneurship. However, by the medieval era, Chinese civilization had not only caught up with those regions commercially but in some respects surpassed both the Islamic world and Christian Europe (Carlen 2016).

More recently, in Britain, the industrial revolution that began in eighteenth century pushed the institutions to reacting to the revolution thanks to inventive British entrepreneurs who did – the “captains” of new industries (Landes et al. 2012).

The United States, particularly during the period from the Civil War until the end of the twentieth century, stands as the quintessential entrepreneurial society. From John D. Rockefeller to Henry Ford and all the way to late twentieth-century information age pioneers like Bill Gates and Steve Jobs, America spawned one iconic and internationally renowned entrepreneur after another (Landes et al. 2012).

In France, Entrepreneurship emerged at the start of the twenty-first century as a national cause. This enthusiasm for entrepreneurship is found in many countries inspired by Schumpeter’s economic thinking. The Schumpeterian thought gave the function of the entrepreneur a driving role in the evolution of capitalism. This political, even societal, recognition of entrepreneurship is concomitant with the recognition of entrepreneurship as a discipline at the confluence of economics, social sciences, and management (Messeghem and Torrès 2015).

However, entrepreneurship cannot be reduced to the creation of a new business, it also could be intrapreneurship, takeover, and spin-off activities. The term intrapreneur has never been explicitly used in McClelland work or Schumpeter, but the entrepreneurial conception includes the intrapreneur. This notion, which appeared in 1976, has often been used without being clearly published (Messeghem and Torrès 2015). The intrapreneur, who behaves like an entrepreneur, has an

entrepreneurial role within an existing organization. Entrepreneurial activity does not therefore necessarily create a business.

On the education level, Kuratko et Morris (2018), declared that Katz (2003) included economic and agricultural literatures and experiences dating back to 1876, while others have touted the Harvard courses taught in 1947. However, the reality of entrepreneurship education in business schools began in the early 1970s. Which matches with the emergence of entrepreneurship education.

Entrepreneurship from Economics to Management

During the centuries, many authors mostly entrepreneurs themselves defined and discussed the entrepreneurship specificities. In most of the studies on entrepreneurship, Cantillon was cited as the first author to publish a book on his experience as an entrepreneur especially in the agriculture field.¹ According to Cantillon “*the entrepreneur is a specialist in taking on risk, ‘insuring’ workers by buying their output for resale before consumers have indicated how much they are willing to pay for it*” (Casson and Godley 2005, p. 26). Marchesnay (2016) stated that Cantillon (1730) called the entrepreneur a venturer or adventurer.

The second author to be recognized as a reference in the industrial entrepreneurship was J.B. Say. In his work, he discussed all the value chain and the marketing strategy to be adapted by an entrepreneur. According to him “*industrial entrepreneurs contribute to production by applying the knowledge acquired, the service of capital and that of natural agents, to the making of products to which men attach a value...It is sometimes a question of bringing into play a very large number of individuals; you have to buy or have people buy raw materials, bring together workers, look for*

¹Olivier de Serres was known also for his work in the agriculture field studies.

consumers, have a spirit of order and economy” (Say 1814, p. 24).

J.B. Say is also at the origin of the Theory of Production which led him to focus on another form of division of labor between the various actors of the production and to bring out the role of the entrepreneur. Thus to him, “for to obtain any product, it was first necessary to study the process and the laws of nature, relative to this product. It was then necessary to apply this knowledge for useful use. Finally, it was necessary to carry out the manual work indicated by the two preceding operations” (Ravix, 2014).

In the twentieth century, Schumpeter changed the landscape by focusing on the innovation and the role of the man as an entrepreneur. To him, the entrepreneur is a man with broad economic horizons and sufficient energy to challenge the propensity for routine and to carry out innovations (Schumpeter 1934). For Schumpeter the entrepreneur can be a director having a desire to be a founder and promoter. It is this last function which best characterizes the function of entrepreneur. Having an ability to motivate. He is above all a leader.

After Schumpeter, the Economic Era started to leave room to other considerations of the entrepreneurs especially in sociology and psychology focusing on the characteristics of the entrepreneur as an individual. The Management era started in the 70th with Gartner and Mc Clelland studies. McClelland’s work paved the way for a whole pan of research in psychology aimed at studying the psychological characteristics of entrepreneurs. This has been the mainstream of research in entrepreneurship until the controversy, in 1988, between Carland and his colleagues who were supporters of the school by the features and Gartner, a defender of the school by the facts (Messeghem and Torrès 2015). At the start of the twentieth century, the role of the entrepreneur through its societal dimension was widely described by Max Weber in *The Protestant Ethics and the Spirit of Capitalism* (Messeghem and Torrès 2015).

Landström and Benner (2010) have pointed three eras of entrepreneurship thinking:

1870–1940 Economic Era

1940–1970 Social Sciences Era

1970–2000 Management Studies Era

As previously mentioned, the 1970s was the beginning of a big interest in studying entrepreneurship from the perspective of the Management field. In 2012, Landström et al. (2012) proposed a classification of the 20 most cited authors in the entrepreneurship field thanks to the J-index: in the first position one can find Schumpeter (1934) followed by Shan and Venkataraman (1982), Shane, Aldrich and Zimmer (1986), Knight (1994), Saxenian (1942), Schumpeter (1997), Venkataraman (1988), Gartner (1965), etc. Interestingly, most of the authors are in the Management field. Only Schumpeter comes from the Economics field suggesting that entrepreneurship has been adopted very quickly by researches in Management especially in the United States. Indeed, the Academy of Management (AOM) has emerged in USA in 1936. Over the years, AOM has evolved from an organization of 10 members to an organization of over 19,000 members from nearly 120 nations. Today, AOM’s 26 professional divisions and interest groups that promote excellence in established management disciplines (Academy of Management website, 2021). In the French speaking countries, two associations were created: AIREPME² (1996) and AEI³ (1998) with the aim of gathering researchers and professionals to promote entrepreneurship by organizing workshops, conferences, research projects, etc. Moreover, each association proposes its own Journal with a high academic ranking.

The Journal of Small Business Management, which started in 1963, was the earliest academic journal in this field. Early articles were more practice oriented (to fit the times), and it was not until 1976 that the American Journal of Small Business

² Association Internationale de recherche en entrepreneuriat et PME (international association for research in entrepreneurship and SME).

³ Académie d’Entrepreneuriat et d’Innovation (Academy of Entrepreneurship and Innovation).

was founded. It was later renamed Entrepreneurship Theory and Practice in 1988 (Kouratko et al. 2020). According to Messeghem et Torres (2015), the entrepreneurship as a discipline has found its expression through the award given to Shane and Venkataraman (2000) for their article in Academy of Management Review, consecrated article of the decade by this major journal in the field of management.

Research in Entrepreneurship

The Paradigm of Opportunity

According to Messeghem and Torres (2015), Small and Medium-sized Entreprises (SMEs) are a privileged object of study, moreover the Anglo-Saxons use the expression “Entrepreneurship and Small business”. The term entrepreneurship has become a generic term that covers research on Very Small Enterprises, start-ups, family businesses, or large companies that favor an entrepreneurial orientation. However, although there is considerable overlap between small business and entrepreneurship, the concepts are not the same. All new ventures are not entrepreneurial in nature. Entrepreneurial firms may begin at any size level, but key on growth over time (Carland et al. 1984). Actually it depends on how these SMEs develop

the “opportunity” on the market. The opportunity paradigm was and still in the core of the development of SMEs and entrepreneurship. It is the way they use the opportunity which will distinguish an SME business from entrepreneurship. In their article, Messeghem and Torrès (2015) summarized different research stream discussing the paradigm of opportunity. The table below presents an adapted version of their work.

Shapero (1975) proposed a model based on the intention process: feasibility and desirability with a propensity to reacting to the opportunities. This concept occupied the entrepreneurship studies in management and was validated and enriched later by different authors (Krueger, Ajzen and Fishbein, Ajzen, etc.) (Table 1).

Typology of Entrepreneurs

The main discussions in different studies are about the psychological traits of the entrepreneurs. A recent typology has been developed by Alexandre (2016) that shows the evolution of the definition of the entrepreneur since Savary in the sixteenth century (Table 2). As described in the Table 2, the entrepreneur profiles evolved during the years and adopted socio styles when in the beginning, the authors emphasized more the features of the individual and their managerial skills.

Entrepreneurship, Table 1 Stream research in entrepreneurship paradigm and opportunity

Stream	Founding authors	Consideration of the opportunity
Economic school	Schumpeter, Kirzner	The pursuit of an opportunity is carried out by a entrepreneur whose function is to contribute to market equilibrium or imbalance
School of Traits or psychological school	McClelland	Certain traits can promote ability of the entrepreneur to perceive the opportunity and influence their propensity to exploit it: Self efficacy, locus of control
Decision school or cognitive school	Shapero, Krueger	The mental processes that lead to identify or create and exploit opportunities
Process school or behavior	Gartner	The emergence of organizational structure that supports identification and exploitation of the opportunity
School of Entrepreneurial Organization	Stevenson, Burgelman, miller	How do existing organizations do they come to identify or create and operate carlandopportunities?
SME school	Torres and Julien, Messeghem, Torres, Zhara and George, etc.	Specificities of the SME, modes of governance and management adapted to this type of organization. But also the opportunity and international entrepreneurship

Adapted from Messeghem and Torrès (2015)

Entrepreneurship, Table 2 Typology of entrepreneurs since the sixteen century

Authors	Period	Typologies
Savary	XVI ème century	The entrepreneur is a perfect trader
Cantillon	(1697–1734)	Manager of production and trade, who bears, alone, the risks linked to market constraints and price fluctuations.
Say	(1767–1832)	The entrepreneur is the farmer, the manufacturer, the trader, or, to designate them by a name common to all three, he is the industrial entrepreneur. The entrepreneur is one who “undertakes to create for his own account, for his benefit and at his own risk, any product”. The entrepreneur is above all an organizer. It brings together and harmonizes the factors of production, to create the framework and conditions for optimal utility.
Schumpeter	1935	The entrepreneur is a “disruptor and innovator,” they are gifted with imagination and show initiative and willpower
Cole	1942	Four types of entrepreneurs: 1. The practical entrepreneur 2. The informed entrepreneur 3. The sophisticated entrepreneur 4. The mathematically articulated entrepreneur
Smith	1967	Two types of entrepreneurs: 1. The craftsman 2. The opportunistic entrepreneur
Collins et Moore	1970	Two types of entrepreneurs: 1. The administrative contractor 2. The independent entrepreneur
Laufer	1975	Four types of entrepreneurs: 1. The manager or the innovator 2. The growth-oriented entrepreneur 3. The efficiency-oriented entrepreneur 4. The artisan entrepreneur
Miles et Snow	1978	Four types of entrepreneurs: 1. The prospector 2. The innovator 3. The follower 4. The reactor
Vesper	1980	At least 11 types of entrepreneurs: 1. Self-employed working alone 2. Team builders 3. Independent innovators 4. Multipliers of existing models 5. Operators of economies of scale 6. Capital raisers 7. Acquirers 8. Artists who buy and sell 9. Builders of conglomerates 10. Speculators 11. Apparent value manipulators
Julien et Marchesnay	1987 1996	Two types of owner-managers: 1. PIG (sustainability, independence, growth) 2. GAP (strong growth, autonomy, little perpetuation)
Carland, Hoy, and Carland	1988	Two types of organizational actor: 1. The entrepreneur 2. The SME owner

(continued)

Entrepreneurship, Table 2 (continued)

Authors	Period	Typologies
Lafuente et Salas	1989	Four types of new entrepreneurs: 1. Craftsman 2. Risk-oriented 3. Family oriented 4. Managerial
Filion	1998	Two types of entrepreneurs: 1. Operator 2. Visionary
Marchesnay	1998	Four types of entrepreneurs: 1. Isolated 2. Nomad 3. Notable 4. Enterprising
Duchéneau	1999	Socio-style of business creators: 1. Rebels (28%) 2. Mature (41%) 3. Insiders (25%) 4. Beginners (6%)

Source: Alexandre (2016) adapted from Filion (1998)

Entrepreneurial Process and Business Model

The entrepreneurial process takes a large importance in the literature on both academic and professional levels. Three entrepreneurial processes are in competition: the effectuation, the causation, and the Lean startup approach.

Sarasvathy (2001) made a distinction between effectual and causal entrepreneurship. “*Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means*” (Sarasvathy 2001, p. 245). It is common in the literature to think that effectuation is more appropriate for women especially in developing countries because they have to undertake with the available means.

In the literature, many researchers adopted the causation process, but many others considered causation as very academic and which doesn’t take into consideration the environment. This competition was translated by the development of the business model in numerous works

proposing very different definitions. Some of them give more importance to the value, others to the resources, etc. Ghezzi (2020) provided different definitions of the business models.

Recently, another entrepreneurship process has emerged (Ries 2011) called a lean startup approach. Its aim is to offer agility to the startups based on the principle of continuous innovation and the possibility to constantly adapt not only its offer but also its company to changes in the market.

On the other hand, more and more research is being hold on gender entrepreneurship because till now, most of the researches discussed the entrepreneurship as it was genderless or even oriented to men. Alexandre (2016) showed a gender distinction of the characteristics of entrepreneurs according to the literature (Table 3). Even though, some of them have been refuted during the years by the researchers who showed that the environment (institutional, socio-cultural, and the education) plays an important role in shaping the characteristics of the entrepreneurs and sometimes there are no differences between men and women.

Entrepreneurship, Table 3 Characteristics of entrepreneurs men/women

	Men	Women
Motivations	Push	Pull
Management style	Vertical	Participative
Risk aversion	Moderated	High
Values	Profit	Family and CSR
Networks	Professional	Social and family
Obstacles	Market and competition	Funding, support, and sociocultural environment
Activity sectors	Industry/technologies	Service and social

Source: Alexandre (2016)

The Possible in Entrepreneurship Research

Even if Entrepreneurship as a discipline is considered as mature, many concepts are yet to be explored. Fayolle (2017) proposes four perspectives to be taken into account:

- Redesigning entrepreneurship research (more qualitative than quantitative, developing entrepreneuring concepts, etc.).
- Crossing fields and concepts (to develop a feminist perspective of the entrepreneurship concept (Henri and Marlow), to develop research at the crossroads of entrepreneurship and education, crossing entrepreneurship and culture, crossroads of entrepreneurship and family business).
- Embedding knowledge in insightful concepts and domains (Entrepreneurial orientation and whether it is a managerial disposition, a behavioral phenomenon, or some combination of the two. Read and Dolmans propose a number of directions to improve the knowledge on effectuation around the concept itself, its antecedents, conditions, and consequences. Psychology, together with economics and sociology, can be considered as a “parent discipline” for entrepreneurship).
- Exploring new or revisiting old research topics: study of rural Enterprise, reexplore the concept of incubators, exploration of illegal entrepreneurship into rural entrepreneurship and seven key questions that are to be asked in an entrepreneurial decision-making paradigm: who, when, where, what, why, how, and what for (Fayolle 2017).

The major themes that characterize recent research about entrepreneurs and new-venture creation are increasingly reflected in entrepreneurship education: opportunities and the entrepreneurial process, venture financing, entrepreneurship research, education and pedagogy, global entrepreneurship, women and minority entrepreneurship, social entrepreneurship and sustainability, corporate entrepreneurship, family business, economic development and entrepreneurship, entrepreneurial cognition (Kuratko and Morris 2018).

Studies on the contextual entrepreneurship especially on women in developing countries are still shy despite the fact that in these countries women participate to improve the household’s living standards thanks to their entrepreneurial activities, even though in most of the times the activity is being hold is in the informal sector. That is the reason why the different governments are encouraging women entrepreneurship especially in the formal sector in order to make them a role model to other women. Fritsch et al. (2019) suggest that new business formation and entrepreneurial role models accelerate future entrepreneurship, particularly in areas with high levels of entrepreneurship due to the aforementioned mechanisms of self-perpetuation. Based on the mechanisms described above, past entrepreneurship fosters the self-perpetuation of entrepreneurship via promoting cultural attitudes among the local population, which are more predisposing to entrepreneurship.

Future research should be oriented toward topics including social business, education, sustainable agriculture, etc. Indeed, if entrepreneurship is the product of individual initiatives, these are contextualized, and fit into social practices in

which a wide variety of actors intervene: public authorities, large companies, research centers, universities, support structures for business creation, but also family dynamics which remain important today (Boutillier 2017).

Finally, the COVID crisis pushed the companies especially the small ones to accelerate the digitalization transformation. It could be interesting to study how the digitalization may affect a company's performance and their international development. The crisis has also provoked a lot of stress and anxiety to entrepreneurs and employees. In France, it exists already an observatory studying the health of entrepreneurs, but a lot of studies still need to be hold in this topic.

Conclusion

Entrepreneurship today is everywhere, across campuses, across communities, and across borders. With the dramatic advances in entrepreneurship scholarship, academic programs, and pedagogy over the past 40 years, there is no question the discipline has achieved academic legitimacy (Kouratko et al. 2020).

In France, in 2013, public universities have created the status of national student entrepreneur⁴ in order to encourage the students to create their venture. The PEPITE⁵ offer students a network and an incubator in order to accompany them during their entrepreneurship activities but also to train them and help them have some fundings. Some of them (those who are not issued from business, they can have an entrepreneur diploma which allows them to continue working on their project after their studies and having a recognized title. This network is meeting a lot of success and is being developed now in different countries and even the

AUF⁶ is a main partner to developing this activity in developing countries.

On the international level, entrepreneurship is becoming a competitive factor between countries. There are many reports proposed by the OECD, the Global Entrepreneurship Monitoring (GEM), and Doing business, with the purpose of providing some recommendation to the countries especially with regards to women entrepreneurship.

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⁴The national student-entrepreneur status allows students and young graduates integrated into an entrepreneurial project in a PEPITE. The establishment diploma “student-entrepreneur” (D2E) accompanies the status of student-entrepreneur: it allows to carry out the project with maximum security and visibility.

⁵Pôles Etudiants Pour L'innovation, Le Transfert Et L'entrepreneuriat (Student Centers For Innovation, Transfer And Entrepreneurship).

⁶Agence Universitaire De La Francophonie (Francophonie University Agency).

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Error

Massimiliano Pastore, Antonio Calcagni and Gianmarco Altoè
Department of Developmental and Social Psychology, University of Padova, Padova, Italy

Errare humanum est

Keywords

Error · Lack of information · Measurement error · Stochastic error · Uncertainty

Synonyms

Lack of information; Measurement error; Stochastic error; Uncertainty

Definition

Error is the lack of ability in explaining empirical phenomena. It can be classified in many ways, depending on the context. In human behavior, it could be considered an unintentional deviation

from a desired aim. In measurement issues, the main distinction is between random and systematic errors. In a statistical sense, it could be viewed either as a result of a measurement process – usually represented as a stochastic process – or as a lack of information about the data generation process. In applied sciences, modeling the error is a relevant source of knowledge and, generally, one of the main aims is to measure or control it.

Error is part of life. For example, we can think of how evolution works: For instance, transcription errors in the DNA – when they produce favorable mutations – contribute to the change of species. Similarly, we can think about those errors that lead some researchers to new scientific discoveries, such as in the case of penicillin or dynamite.

The concept of error is also closely related to randomness. Indeed, all natural phenomena show stochastic properties, which render their outcomes difficult to predict (e.g., long-term or large-scale processes).

Errors can be classified either as behavioral, that is, a deviation from a behavioral norm (Merriam-Webster 2021), or as a function of something being measured. In the first case, we use the term *mistakes* to indicate a deterministic violation, whereas in the second case, we use *measurement errors*, a slightly different terminology to indicate a more complex phenomenon.

Measurement Errors

Measurement error is the difference between empirical measurements and their true value, i.e., *measurand*; (Dodge 2003). It is defined as $y = \eta + \epsilon$ where η is the measurand and ϵ the related error. In this context, ϵ quantifies the uncertainty of knowing η . More generally, the Guide to the Expression of Uncertainty in Measurement (GUM) – a systematic of the Joint Committee for Guides in Metrology (for further details, see <https://www.bipm.org/en/home>) – makes a precise distinction between errors. In particular, GUM suggests to differentiate between two sources of uncertainty, which are the basis of what we commonly call errors: type-A and

type-B uncertainty. By and large, type-A uncertainty corresponds to a statistical analysis of measurement uncertainty through which we identify random or systematic errors affecting the measurement process (systematic errors are commonly recognized as biases in measurement). By contrast, type-B uncertainty comprises all those sources which depend upon general measurement conditions, such as previous measurement data and the experience with the object being measured. The first type of uncertainty is something related to the precision of a measurement, whereas the second type relates to the accuracy of the measurement process.

Systematic and Stochastic Errors

In measurement-related applications, an important distinction is made between systematic and random errors. An example will clarify this difference. Imagine that we are going to measure the weight of a given object, for instance, a coffee table, and suppose we know its true weight η in advance. To quantify the weight, we use measurement tool A . If we could measure the table weight repeatedly – for instance n times – we would obtain a collection of measures, namely, $x_A = (x_{A_1}, \dots, x_{A_n})$. By averaging over n , we get the quantity $\bar{x}_A$, which is an estimate of the true table weight η . A systematic error occurs when the current estimate $\bar{x}_A$ differs from η by a systematic positive or negative quantity τ (i.e., $\eta = \bar{x}_A + \tau$). It has the property that $\eta \neq \bar{x}_A$ even though we keep new measurement samples. As such, systematic errors affect the measurement process by introducing a constant bias over measurements. On the contrary, a random error does not introduce any bias in the measurement process: If we repeatedly measure the table weight then the estimate $\bar{x}_A$ will approximate the true quantity η ($\bar{x}_A = \eta$ as a limit case). Then, what the random error introduces in the measurement process is a stochastic fluctuation of the measurements $x_{A_1}, \dots, x_{A_n}$ around η . These fluctuations are predictable and behave according to a predefined probabilistic model, for instance, the Gaussian model (also known as *white noise*). In this sense, while the systematic error may be removed by identifying

the source causing biases, random error cannot be removed because it is inherent in the measurement process.

Sampling Error

Sampling error is the difference between the true quantity η and its estimate $\bar{x}_A$ that is computed given a sample of measurements. It is due to the fact that we use samples in order to estimate η , the unknown measure, and we are going to quantify. With a slightly different terminology, in statistics true but unknown quantities are called parameters, and samples of measurements are drawn from a target population. Then, the sampling error is simply the approximation we get by estimating the population parameters through statistical samples.

Errors in Statistical Models

Random errors are the cornerstone of statistical modeling. In general, a statistical model is of the form $Y = f(X) + \epsilon$, where Y is the response variable (also known as *outcome*), X is the set of predictors (or *covariates*), and f is a function that deterministically links X to Y . In this context, ϵ is the random error term, which makes the model different from a standard deterministic or mathematical model. The simplest case of a statistical model is the linear one, in which model predictions are represented as a straight line (or a plane) as follows:

$$\hat{Y} = \hat{\alpha} + \hat{\beta}X \quad (1)$$

In this formulation, $\hat{Y}$ contains the predictions of the model (i.e., the expected values), X is the matrix containing the variable currently predicting the outcome, whereas $\hat{\alpha}$ and $\hat{\beta}$ are the estimated (i.e., based on available data) parameters of the model, namely, the intercept and slopes, respectively. As a result of the presence of the random error, the relationship between observed and predicted data is corrupted by random fluctuations:

$$Y = (\hat{Y} + \epsilon) = \hat{\alpha} + \hat{\beta}X + \epsilon \quad (2)$$

In order to keep the model as simple as possible, two basic assumptions follow: (i) the error ϵ is Normally distributed around zero with constant variance, and (ii) the variance does not change as a function of the predictors X . These assumptions are formally defined with the well-known probabilistic notation $\epsilon \sim \mathcal{N}(0, \sigma^2)$. As an example, consider a data-set of $n = 260$ high school students. For each student, two characteristics are available at the same time: the time (in hours) spent to do homework (X), and the final score in a mathematical test (Y). Figure 1a shows the observed outcome Y as a function of the predictor X . It seems quite clear that test scores increase as the time spent to do homework also increases.

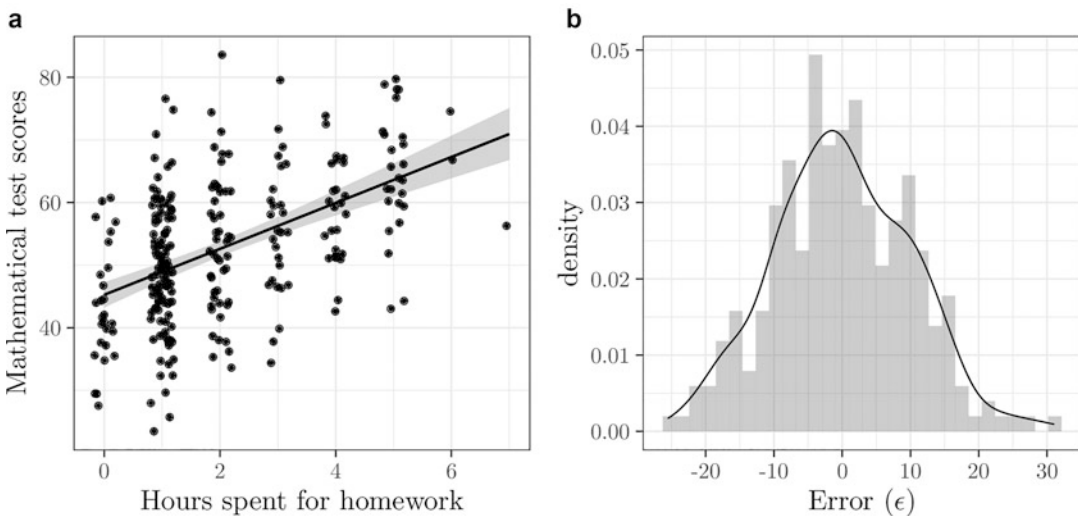
The black line is the estimated regression line with the following equation: $Y = 45.3 + 3.7X$. In the current example, the model predicts (on average) that a student who spends $X = 0$ (hours) to do homework will have a math score equal to $\hat{Y} = 45.3$. By inspecting the figure, it can be noticed that actual math scores ranges from 27.5 to 60.7. For example, the first student with $X = 0$ (hours) shows a math score equals to

$Y = 44.3$ with a difference of $Y - \hat{Y} = -1.0$ scores from the model predictions. This is due to the prediction error of the model.

As a consequence, the differences between the current math scores (Y) and the predictions ($\hat{Y}$) can be computed via Eq. (2). Figure 1b depicts the distribution of the prediction errors (also known as *model residuals*). As expected, residuals are close to zero (on average) and range between -25.5 (minimum) and 31 (maximum). The spread around zero it is due to the error component ϵ , which is the random noise term. Note that if the model was able to predict math scores perfectly (i.e., with no differences between observed and predicted values), the errors would be zero and the model fit would consequently be perfect. As a by-product, an index used to evaluate model fit is the well-known R^2 (R-squared), which is computed as the ratio between error variability and total observed variability. It is formally defined as follows:

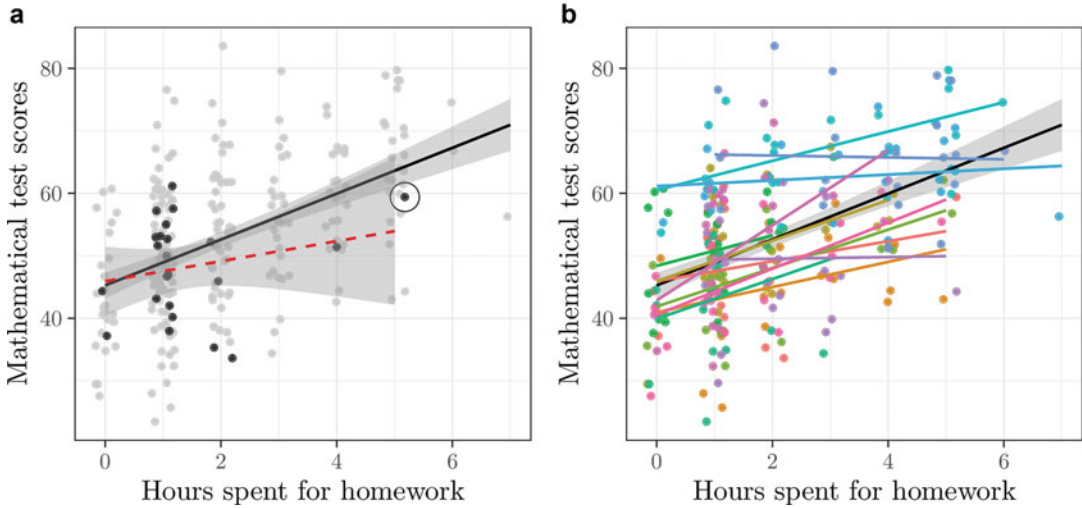
$$R^2 = 1 - \frac{\text{Error variability}}{\text{Total variability}} \quad (3)$$

In case of perfect fit, all errors would be pushed toward zero, error variability would



Error, Fig. 1 Hours spend for homework and mathematical test scores in a sample of $n = 260$ high school students. (a) The straight black line represents the linear model predictions whereas the gray area represents the uncertainty

related to the previsions. Data were jittered on the x-axis to enhance legibility. (b) Distribution of the errors as computed by the difference between observed and predicted math scores



Error, Fig. 2 Example of multilevel structure. (a) The black line is the regression line estimated on all data ($n = 260$); the red line is the regression line estimated on

students in a specific class (black points, $n = 23$). (b) Colored lines and points referred to the different 12 classes

also tend to zero, and the R^2 index would be equal to one.

As many data types show a hierarchical or clustered structure (Gelman and Hill 2007; Pinheiro and Bates 2000), it is possible to further decompose the error term into two subcomponents. In the current example, students are naturally clustered into 12 different classes, which are in turn clustered into 4 schools. In this case, estimating model parameters assuming that observations are independent could lead to biased estimates.

Figure 2a shows the math scores of a subset of students in a selected class (black dots). The red line is the regression line which has been estimated based on these observations. As we can notice, the current regression line is quite different from the previous one (in black color): because it has been estimated on a few number of observations, its slope is strongly influenced by two observations showing longer working time. For instance, consider the student associated to $X = 5$ (hours) and $Y = 59.4$ (math score). In Fig. 2a, this observation has been highlighted with a black circle. This student math performance is 4.2 scores below the black line – which is the expected value from the pooled regression model – and 5.5 scores above the red line – which is the expected value with respect to his

class. Then, two sources of errors arise in terms of difference between observed and predicted scores: The first represent the difference by the pooled model, and the second represent differences for each specific group/class. As a result, different regression lines can be estimated for each group in the sample. Figure 2b shows the linear models for each of the 12 classes in the sample. By means of this example, we have described a well-known statistical tool – i.e., multilevel modeling – used in many disciplines, including those interested in studying individual differences. Unlike standard linear regression models, multilevel models aim at finding a compromise between the pooled model – which ignores the nested structure of the data – and the non-pooled model – which instead considers each group separately in the sample. This gives rise to two subcomponents of the general error ϵ , namely, $\epsilon_{\text{overall}}$ which is the overall sample uncertainty and ϵ_{groups} , the component referring to the subject-specific uncertainty.

Conclusion

Over the past 20 years, the development of computing algorithms and the growth of computational power have made possible what was

considered impossible in statistics. In particular, nowadays it is possible to evaluate statistical models characterized by very complex error structures (e.g., mixed-effects models), that are also increasingly close to the complexity of real phenomena. These models, which are difficult to express analytically, can be estimated through resampling and simulation methods that require the use of high performance computers. In these models, complex error structures can be taken into account and different scenarios can be evaluated on the basis of several theoretical hypotheses. From this perspective, the analysis of errors allows to evaluate the variability of observed data and the associated uncertainty of model predictions in depth. Finally, the analysis of errors can suggest the possible presence of variables or relationships between variables not previously taken into account, thus paving the way for new theoretical hypotheses.

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Ethics of Possibility

Samantha Copeland
Ethics and Philosophy of Technology section,
Department of Values, Technology and
Innovation, Faculty of Technology Policy and
Management, Delft University of Technology,
Delft, Netherlands

Abstract

We can think about the relationship between ethics and the possible in two ways. First, in order to be ethical, we need to be able to imagine what is possible, so that we can

deliberate about what we should do. Second, in order to improve ourselves, we need to be able to imagine ourselves and even our world differently, and to see that alternative as a real possibility so that we can deliberate about how to make it a reality. The possible delineates the moral realm in the sense that we assign responsibility and blame according to what is possible, and as we compare what is necessary to what is merely possible when making ethical decisions. As a tool for ethical reasoning, the possible can be seen as either a catalyst or an obstacle. In one sense, the possible is the input for our moral imagination, but possibilities also act as cautionary tales, for instance, in respect to developing new technologies with uncertain potential. What is possible, on the other hand, can hinder our ability to act ethically, when we find ourselves overwhelmed or lost in possibility itself.

Keywords

Possible futures · Ethics of possibility · Moral imagination · Normativity · Ethics · Philosophy

Introduction

Ethics is a matter of how we behave with and toward one another, and the study of ethics is an examination of what counts as good or bad behavior. It is more than an examination of what is true about our behavior, it is also a study of the norms and values that *should* guide our behavior. Possibility is an essential part of ethics. This is not only because “what is possible” is a normative question – that is, a question that requires values to answer fully – but also our very ability to ask that question is what allows us to be ethical beings in the first place.

We can think about the relationship between ethics and the possible in two ways. First, in order to be ethical, we need to be able to imagine what is possible, so that we can deliberate about what we should do. For instance, if we want to decide what is the right thing to do, we often consider the probable consequences of our proposed actions:

Even if probability is the tool by which we compare alternatives, we first must consider what the possible outcomes of our actions are before we can think about their likelihood. Second, in order to improve ourselves, we need to be able to imagine ourselves and even our world differently, and to see that alternative as a real possibility so that we can deliberate about how to make it a reality. We believe that a good life is possible, and that is why we make the good life our pursuit.

There are also several different ways that the possible intersects with ethics in the history of philosophy as well as in more recent work. First, there is the question of what is actually possible: In ethics, we argue that we should not demand things of people that they cannot actually do; every “ought,” that is, implies a “can.” Another way to think of this is that an obligation must entail a possibility. But what kind of possibility must it entail? In the sense of a *logical* possibility, “what is possible” is what could happen, or rather what would not be prevented from happening. This is in opposition to the actual, what is happening, or the probable, what is likely to happen. The possible can be logically possible even if it never actually comes into being. Aristotle makes this ancient Greek idea of the possible more concrete with his idea of potentiality: The essence of a creature or a thing determines what is necessary about it, or what it has potentiality for, whereas the accidental denotes properties that are not necessary in that essential way. I have necessary features as a human, being rational and having a certain kind of body, but whether that body is tall or short is an accidental property; accidents can occur or not without altering the essence of the creature or thing. So the accidental is the merely possible, in this account, but it remains pragmatically relevant in the sense that such contingencies must be accounted for in practical reasoning. Ethical action, for instance, according to Aristotelian virtue theory, emerges from the ability of a person to reason successfully about the possible actions they can take in a particular situation, and to choose the action that a virtuous person would choose.

The possible has also been considered necessary for moral action in other ways. Harry

Frankfurt (1969) has, for instance, labeled a key criterion for assigning moral responsibility, “the principle of alternate possibilities.” Moral responsibility, according to this principle, can only be assigned to those people who “could have done otherwise” – that is, to those who willingly chose this possible action or future over other (known or obvious) possibilities, and whose actions were not determined by coercion or other constraints. Frankfurt only labeled the category in order to critique it; however, and as David Robb (2020) points out in the Stanford Encyclopedia of Philosophy entry on this topic, logical possibility is not sufficient for this criterion: In cases where it is theoretically or logically possible to do something, but not actually possible (such as a drug addict being able to simply drop their habit), then moral responsibility is again in question.

As a tool for ethical reasoning, the possible can be seen as either a catalyst or an obstacle. Utopias have long been part of ethical reasoning, set as a future possibility, and also an ideal for society to strive for, with famous examples from Plato through Moore. Similarly, many see science fiction as a resource for ethical thinking, introducing and working through possible future scenarios toward which we can strive or about which we should be cautious (e.g., De Cruz et al. 2021). In one sense, the possible is the input for our moral imagination; as Matthew Brown has recently argued (2020), moral imagination is required for much of our ethical reasoning, insofar as we must imagine how others might feel or respond, we must imagine the possible impact of our decisions and behavior, and we need to imagine possible ends and ideals toward which we can progress. Lorenzo Magnani explores the relationship between moral reasoning and abduction, the kind of reasoning we employ when considering possible explanations – moral reasoning in this sense “can be viewed as a form of ‘possible worlds’ anticipation” (2006, p.206). In the realm of science and technology, the possible not only drives creative innovations, but also gives content to our ethical reasoning. Philip Brey (2012), for example, has proposed that an “anticipatory ethics” is required for addressing the possible impact of emerging technologies; where we do

not yet know how things will go, we must imagine what will possibly happen in order to take precautions and shape our designs in ways that avoid undesirable outcomes and encourage desirable ones. Possibilities that ethicists should focus on mapping, suggests Brey, are those that are potentially harmful, should they occur; similarly, the standard use of the “precautionary principle” in ethical deliberations demands that the burden of proof is on those who would say that harmful consequences of a new technology or innovation are improbable – a company that wants to do something new, that is, must first take precautions to think through possible harms and act to reduce the probability of bad things happening as a consequence.

The possible futures that new technologies introduce into our world frequently generate discussion and debate in ethics, about whether we ought to pursue or prevent such possibilities when we have the choice. With the advent of genetic modification, for example, discussions about what possibilities there are for humans, individually or as a species, have been brought to the fore. Julian Savulescu has famously argued that because it is now possible to alter our genetic future for the better, we have a moral duty to do so: We ought to improve our future generations as we can, and when we have the technology to do so, we ought to use it. This “transhumanist” perspective suggests that part of our ethical duty is to intentionally and consciously ensure that the next generation has the “best life possible,” which may entail changing the very nature of humans through technology (e.g., Savulescu and Bostrom 2009). This approach is in sharp contrast with another well-known ethical debate about “possible humans,” taken up most explicitly by David Banatar’s (2006) argument that existing at all, given the possible benefits and possible harms to any given individual who lives, is on balance always a harm; rather, we are better never to have been at all. The underlying philosophical idea here is that any possible human is likely to live a terrible life, and since we have an ethical duty not to bring harmful possible futures into being where we can, we have a duty not to procreate new

possible humans either (see Parker 2007 for a review & critique of key positions in this debate).

Possibility, therefore, highlights two forms of moral responsibility, active and passive: Where we can act toward better possible futures, we ought to; when we willfully choose harmful possibilities over better ones, we are blameworthy in retrospect. These types of moral responsibility, however, presume that freedom of choice about possibilities and even the limits of our moral imagination are unrestrained. This is not the case, however, in many situations and for many people: Oppression, as feminist theory has pointed out, can limit what we can imagine to be possible in ways that have ethical significance. Maria Pia Lara (2008), for example, argues that the women’s movement was transformative because it envisioned as possible and then made real new forms of democracy, justice, and the good life. Without such transformative change, it was not possible for women to live the good life they imagined; the link between ethics, possibility, and reality becomes clearest in transformative contexts.

Indeed, denying this link can also have ethical significance, as Søren Kierkegaard and, more recently, Sara Ahmed have addressed with their philosophical approaches. Kierkegaard, in his work *Either/Or*, delineates the choice we have between seeing the possible through an aesthetic or ethical lens (see, eg., McDonald 2021). The misdirected aesthete dwells on the possible as an alternative to the actual; they focus on what has been and what could be, if only things were different than they are. This is misdirected because it leads them into the realm of infinite possibility and thereby inaction (or, in the extreme case, deep irony, where the actual is fully reduced to the merely possibly otherwise, and thereby dismissed). An ethical attitude toward the possible, on the other hand, sees the possible as inspirational and guiding, marked by reflection and self-knowledge rather than despair.

Similarly, Ahmed points to how the recognition of possibility can block our ability to be happy. In the conclusion to her book *The Promise of Happiness*, she argues that because it is

always a possibility that one might be unhappy, in order to be happy it seems one must exclude not only unhappiness but also possibility itself. As Kierkegaard noted, the realm of possibility is a realm in which all things are equal: “Possibility means grasping terror as well as joy” (Ahmed 2010, p. 219). Following Jean-Luc Nancy, Ahmed then suggests we might take “happenstance” as the appropriate approach: Where we must accept and also choose between good and bad possibilities at every turn, happiness is one possibility among others. Such an openness to possibility, in turn, provides the conditions for ethical encounters (p. 220). Embracing possibility as such, without getting lost in its infinitude and thereby failing to act on any possibility, is the key to ethics, according to such accounts.

The idea of an ethics of possibility has been explored by a few. Arjun Appadurai (2013), in a series of essays “on the global condition,” proposed a distinction between ethics of probability, which take management and measurement as their tools for moral decision-making, and the *ethics of possibility*. The latter, Appadurai suggests, includes “those ways of thinking, feeling, and acting that increase the horizons of hope, that expand the field of the imagination, that produce greater equity in what I have called the capacity to aspire, and that widen the field of informed, creative, and critical citizenship” (p. 295). Seana Moran picks up a similar theme in her 2014 chapter, “An Ethics of Possibility,” discussing how creativity can ground ethics. Such an ethics would be “built on opportunities,” in contrast to traditional rule-based ethical frameworks that list principles and virtues as guides toward ideals. Such an ethics would provide “a valuing of what is beyond the known and accepted, a humility about what we already understand against the vastness of what we may not, and a courage to pursue unknowns” (p. 288); Moran suggests that creativity itself may be a moral obligation, and that creativity and ethics are iterative and ought to be integrated. Mikhail Epstein (2019) promotes a ‘possibilist mode of thinking’ with his philosophical investigation into the modalities of the possible, with the aim to encourage transformative

thinking and paradigm shifts in culture and thought.

Thus, the possible not only delimits our ethical actions and our moral responsibility, but is also necessary fodder for moral imagination, empathy, and utopian and other forward-thinking ethics. It can hinder our actions if we find ourselves overwhelmed by it, and allow ourselves to dwell in the aesthetic or the ironic or the simply happy instead. When we adopt ethical attitudes that embrace the possible, however, we not only do so by way of allowing ourselves to be uncomfortable in a place where both good and bad possibilities reside, but we also thereby open ourselves up beyond the universal principles of traditional rule-based ethics, or move beyond descriptive ethics about what is happening now to think about possible (potentially transformative) futures, those we should strive for as well as those we should strive to avert.

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Existentialism

Alejandro Dagfal

Facultad de Psicología, University of Buenos Aires, Consejo Nacional de Investigaciones Científicas y Técnicas, Biblioteca Nacional, Buenos Aires, Argentina

Keywords

Existentialism · Jean-Paul Sartre · Philosophy · Phenomenology · Humanism

Definition

Jean-Paul Sartre was a French philosopher, writer, political activist, and literary critic. He was one of the most renowned intellectuals of the twentieth century. He is considered as the main representative of French existentialism (also known as French existential phenomenology). His capital philosophical work, *Being and Nothingness* (1943), turned into an unexpected popular success. By the end of World War II, existentialism had become an intellectual fashion, like surrealism after World War I.

Consistent with his atheism, Sartre relegates the essence. If there is no God, no Creator, then, there is no human nature, no previous definition of man, no a priori. Man is thrown into existence being nothing, and Sartre tries to extract all the

possible conclusions from this radical starting point. According to him, man is nothing but what he makes of himself. Having no essence, he is always confronted to the choice of what he wills to be. Then, “man is condemned to be free”, but he is also responsible for what he becomes.

Sartrean consciousness, as a nothingness deprived of being, is the ontological foundation of freedom. That is why the French philosopher opposed any kind of determinism, particularly that of Freudian psychoanalysis, but also the one of traditional psychologies, Marxist philosophies, etc. On the other hand, the non-coincidence of consciousness with itself, and, at the same time, its separation from reality, implied “the possibility of the possible”. In other words, Sartre’s conception of the possible is grounded on the same nothingness that is synonym to freedom.

Introduction

Jean-Paul Charles Aymard Sartre (1905–1980), better known as Jean-Paul Sartre, was a French philosopher, writer, political activist, and literary critic. He was one of the most renowned intellectuals of the twentieth century. Along with his partner, the writer and philosopher Simone de Beauvoir, he is considered as the main representative of French existentialism (also known as French existential phenomenology). In his philosophical essays and novels (such as *Being and Nothingness*, 1943, and *Nausea*, 1938), Sartre recuperated an ancient intellectual tradition stressing the absurdity of existence, the meaninglessness of life, and as a consequence, the original helplessness of mankind. His predecessors can be traced back to Fyodor Dostoevsky and Friedrich Nietzsche, but also to Søren Kierkegaard and Martin Heidegger.

In his first philosophical steps, in the 1930s, Sartre was guided by Henri Bergson and Edmund Husserl, who emphasized the importance of consciousness as the true source of human experience. Husserl’s phenomenology, which implied a “return to things” as they were shown by “lived experience”—as they “appeared” to consciousness—was for Sartre a springboard. However, at that

early stage, he already had a different point of view about the ego, which he did not consider “transcendental,” but a mere illusory object (Sartre 1937). According to the young French philosopher, we identify ourselves with an ego, we think that we are that object – a personalized, biographical self – only to deny that we are nothing but an impersonal consciousness. In fact, for Sartre, from the very beginning, the practical function of the ego was to hide the active character of the consciousness we are, of that creative “nothingness” that reveals its own objects, including the ego that we usually take, mistakenly, as the master of consciousness – if there was such a thing as a center of consciousness, for Sartre it would be closer to body than to the ego. This split between consciousness and ego, where the latter plays a secondary and delusional role, would later be developed by Jacques Lacan in his famous “looking-glass phase” (see Lacan 1964/1981). At that moment, both thinkers were profoundly influenced by Hegel’s dialectical and intersubjective theories.

Existentialism as a Form of Humanism

In the 1940s, in the footsteps of Heidegger, Sartre’s phenomenology would become an existential one. His capital philosophical work, *Being and Nothingness* (Sartre 1943/1958), turned into an unexpected success. By the end of World War II, existentialism had already become a fashion in the intellectual circles, like surrealism after World War I. In spite of its growing popularity, at the time, existentialism was criticized by Catholics and Communists alike, the former claiming it was a materialist and atheist doctrine, and the latter protesting that it was too subjective. Phrases taken out of context, like “Hell is other people” or “Man is a useless passion,” had also provoked lots of controversy in the general public. In a postwar period – a moment of hope and reconstruction – existentialism was seen as a pessimistic doctrine proclaiming despair and nihilism (Elkaïm-Sartre 1996/2007).

In this context, it is understandable that, in 1945, Sartre took the effort to introduce

existentialism under a different light. He did so in a conference he gave a few days before the launching of a journal that would be legendary: *Les Temps Modernes* (which he founded with his partner, Simone de Beauvoir, and their common friend, the philosopher Maurice Merleau-Ponty). The very title of the conference, *Existentialism is a humanism* (Sartre 1946/2007), gives an idea of its content. Sartre did his best to show how his philosophy, however dark it could seem, had a lot to do with human freedom and with the future of mankind:

Atheistic existentialism, which I represent, is more consistent. It states that if God does not exist, there is at least one being in whom existence precedes essence—a being whose existence comes before its essence, a being who exists before he can be defined by any concept of it. That being is man, or, as Heidegger put it, the human reality. What do we mean here by ‘existence precedes essence’? We mean that man first exists: he materializes in the world, encounters himself, and only afterward defines himself. If man as existentialists conceive of him cannot be defined, it is because to begin with he is nothing. He will not be anything until later, and then he will be what he makes of himself. Thus, there is no human nature since there is no God to conceive of it. Man is not only that which he conceives himself to be, but that which he wills himself to be, and since he conceives of himself only after he exists, just as he wills himself to be after being thrown into existence, man is nothing other than what he makes of himself. This is the first principle of existentialism (Sartre 1946/2007, p. 22).

Against an ancient philosophical tradition, from Plato to Husserl, Sartre relegates the essence. If there is no God, no Creator, no “superlative artisan,” then, there is no such a thing as a human nature, either. No universal concept of man, no previous definition, no a priori. Man is thrown into existence being nothing. And Sartre tries to extract all the possible conclusions from this radical starting point. According to him:

- Man is nothing but what he makes of himself.
- ‘Man is condemned to be free’.
- He is responsible for what he becomes (or what he chooses to be in line with his acts).
- There are no excuses, no alibis.
- To take refuge behind passions or behind deterministic theories equals to ‘bad faith’.

- Anguish, abandonment and despair derive from the responsibility that comes with freedom.
- Existential anguish leads to action and commitment, not to immobility or contemplation.
- Man can only be defined in relation to his actions and commitments.

Considering these principles, why would existentialism be a sort of humanism? “This is humanism [. . .] because we show that it is not by turning inward, but by constantly seeking a goal outside of himself in the form of liberation, or of some special achievement, that man will realize himself as truly human” (Sartre 2007, p. 53). In other words, if existentialism was related to humanism, it was through the promise of the realization of man’s possibilities. For Heidegger, however, Sartrean humanism stayed on a metaphysic and subjective level. Giving precedence to existence over essence, it forgot the fundamental problem: “the truth of Being” (Heidegger 1946/1999).

The Ontology of Freedom

The ontology of Sartre’s existentialism was developed extensively in *Being and Nothingness* (1943/1957). Nevertheless, his conception of being was not equal to Heidegger’s. In fact, this “essay on ontological phenomenology” was meant as a study of the structures of experience and consciousness, in order to understand the way reality manifests itself. In the Husserlian tradition, objects “appear” to consciousness, they “reveal” themselves. And a phenomenological analysis tries to carefully describe how these appearances are produced, for they show the very structure of the human world. Strictly speaking, for Sartre, there was only one true form of being: the being of matter, of physical objects, as opposed to human consciousness, which was not “true being,” but nothingness: the negation of being. As a presence, as the activity of “being aware” of objects, consciousness intends objects, but it is never an object. Not even when it tries to reflect about itself. There is always a distance, a

noncoincidence between consciousness and the objects it reveals and negates, differentiating itself from them.

Following Hegel, for Sartre, the real is dialectical, and negativity plays a key role in humanizing reality. As king Midas did with gold, Sartre’s consciousness turns to nonbeing everything it touches. Actually, human consciousness is the only way of “nihilating” (a Sartrean neologism), of introducing a lack, a bit of nothingness in the realm of being, where nothing lacks. If being is defined by its completeness, its self-sufficiency, and its identity (it is what it is), nothingness is sheer negativity: pure lack and difference introduced by consciousness (that is what it is not). Unlike Hegel’s, though, in Sartre’s world, there is no *Aufhebung*, no transcendence of the conflict between being and nothingness, whose relationship always remains problematic and unresolved (Descombes 1979). The fact that Sartre adopted Hegelian vocabulary to designate these two ontological regions does not simplify the affair. The being-in-itself (*être-en-soi*) of the material objects and the being-for-itself (*être-pour-soi*) of consciousness can never reach an impossible synthesis (being-in-itself-for-itself) that the French philosopher compares with the “desire to be God.”

Sartrean consciousness, at last, even deprived of being, of which it always depends, as a nothingness, is the ontological foundation of freedom. If there is no human nature, no a priori definition of man, every man has to begin by making an initial decision related to being. He has to give himself a fundamental project concerning the others, the world, and his own body. He has to find his own way “to-be-in-the-world.” The possibility of not choosing does not exist. It carries all the weight of responsibility. Hence, man “is condemned to be free” (Sartre 1943/1957, p. 129). Yet, if Sartrean freedom is another name for damnation, it is not pure openness. It carries all weight of responsibility in a desperate attempt to be. It has not the lightness of a boundless free will. “The for-itself chooses because it is lack; freedom is really synonymous with lack. Freedom is the concrete mode of being of the lack of being” (Sartre 1943/1957, p. 565).

This radical conception of freedom – criticized by friends and foes – made the French philosopher oppose any kind of determinism, particularly that of Freudian psychoanalysis, but also the one of traditional psychologies, Marxist philosophies, etc. For Sartre, any given behavior needs to be understood in the light of the “original choice” and not mechanically explained. Human conducts become meaningful regarding the future, not the past. There is no linear unconscious causality but the inscription of an action in a totality, in “a project of itself toward a possible” (Sartre 1943/1957, p. 460). This kind of comprehension (*verstehen*) is the one Sartre proposed for what he called “existential psychoanalysis,” as opposed to “empirical psychoanalysis.” “This psychoanalysis has not yet found its Freud. [. . .]. But it matters little to us whether it now exists; the important thing is that it is possible” (Sartre 1943/1957, p. 575).

Existentialism as a Philosophy of the Possible

The “modal vocabulary” – not to say a “modal logic” – had great popularity in the French thought of the twentieth century. Thus, it was not rare to find modalities – such as “the necessary” and “the contingent,” “the possible” and “the impossible” – as categories serving to organize different theories and to formulate definitions. For example, for Bergson (1934), the real was the possible, while for Lacan, on the contrary, the real was the impossible – the impossible to bare, the impossible to symbolize, and so forth. For Derrida (2007), at his turn, the real could be defined as “an impossible possibility.” In this context, in the 1940s, Sartre used to combine those modalities, to the point that Sève (1996) even attributed him a “modal ontology.” “Being-in-itself is never either possible or impossible. It is [. . .]. Consciousness absolutely cannot derive being from anything, either from another being, or from a possibility, or from a necessary law” (Sartre 1943/1958, p. lxvi); “we could define the body as the contingent form which is assumed by the necessity of my contingency” (Op. cit., p. 309).

Beyond the tongue twisters, among those modal terms, for Sartre, “the possible” was the

crucial one, so he dedicated it a seven-page paragraph of *Being and Nothingness*, although the category is omnipresent in the book, receiving multiple definitions: “The possible is an absence constitutive of consciousness in so far as consciousness itself makes itself” (Op. cit., p. 101). “The possible is the something which the For-itself lacks in order to be itself. [. . .] The possible does not exist as a pure representation, not even as a denied one, but as a real lack of being which, qua lack, is beyond being. It has the being of a lack and as lack, it lacks being. The Possible is not, the possible is possibilized to the exact degree that the For-itself makes itself be; the possible determines in schematic outline a location in the nothingness in which the For-itself is beyond itself” (Op. cit., p. 102). In every case, the possible implies a noncoincidence of consciousness with itself, a distance with what I am and, at the same time, a separation from reality. In other words, the possible is grounded on the same nothingness that is synonym to freedom. It is a fundamental concept that can be used to define the for-itself, the situation, and temporality, but death and desire as well. It is such an important notion that it gives the book its “tonicity” (Sève 1996).

For Bergson (1934), the possible is a self-deception. For him, there are free acts that once they are carried out, retrospectively, give us the illusion that they were a possibility. For Sartre, in turn, possibility is a property of an existing human reality, which is not a quality of things nor a purely subjective faculty, like thought or imagination. Against Aristotle, Leibniz, and Spinoza, Sartre stated that a representation may be true or false, but could never become possible. For example, “in order for the rain to be possible, there must be clouds in the sky” (Op. cit., p. 98). However, the rain is not in the clouds as a “potentiality” – as Aristotle would say – since the in-itself is only what it is. In its plenitude of being, it is not – or it does not have – potentialities. The clouds are vapor, not potential rain. “These clouds can change into rain only if I surpass them towards the rain” (Op. cit., p. 98). It is not the ego that is capable of this surpassing, but the for-itself that can transcend its situation, “possibilizing” the

rain. Transcendence, in this case, implies otherness, not just nothingness (Epstein 2019).

In the end, there is a hierarchy of possibilities, ranging from the less to the more personal. In fact, my ultimate possibilities are, on the one hand, the original project, my fundamental choice, and, on the other hand, death, “the possibility that there are for me no longer any possibilities” (Sartre 1943/1958, p. 547). The initial project that I am gives meaning to all my other possibilities. It is the whole structure in relation to which all my actions make sense. For example, examining the cases of thirst or sexual desire, Sartre comes to the conclusion that satisfaction is always somehow disappointing, not because there is no pleasure, but because of “the evanescence of the coincidence with self” (Op. cit., p. 102). “For the for-itself attained by the realization of the Possible will make itself be as for-itself—that is, with another horizon of possibilities” (Op. cit., p. 101). In this context, desire appears like a void that not necessarily calls to be filled. Sometimes, unrealized possibilities are more intense than real experience (Epstein 2019). “In itself indeed desire is an emptiness. But no non-reflective project aims simply at suppressing this void. Desire by itself tends to perpetuate itself; man clings ferociously to his desires” (Op. cit., p. 101).

The fundamental desire, though, remains that of an impossible coincidence between the for-itself and the in-itself. “This is why the possible is projected in general as what the for-itself lacks in order to become in-itself-for-itself” (Op. cit., p. 566). A philosophy of the possible consistent with this Sartrean conception of desire should not take freedom as the maximal realization of possibilities, which would amount to their elimination, but should rather aim at a “peaceful coexistence” with the incompleteness inherent to consciousness.

Summary

In the 1940s, Jean-Paul Sartre coined a new philosophy, French existentialism, which underlined the fragility of being. His conception of human consciousness as a nothingness, far from diminishing the importance of man, laid the

grounds for a kind of humanism that placed freedom in the center of human reality. For man, according to existential philosophy, once he is “thrown into existence”, the fundamental choice, the original project, is an answer to the question of being. Against all forms of determinism – but also against common sense, for Sartre, that answer is always more related to the future, to the dimension of the possible, than to a past that has already been.

Cross-References

- [Determinism](#)
- [Dialectics](#)
- [Illusion in Perception](#)
- [Possible in Philosophy](#)
- [The Possible in the Life and Work of Jacques Lacan](#)

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Experiences of Adversity and Creative Possibility

► [American Pragmatism](#)

Extended Mind

Victor Loughlin

Centre for Philosophical Psychology, Department of Philosophy, University of Antwerp, Antwerp, Belgium

Abstract

Extended Mind is usually understood to be a claim about cognitive extension, that is, it is usually understood to be the claim that the boundaries of the mind can occasionally extend to include objects in the environment. This chapter will argue that understanding Extended Mind in this way helps zero in on how this claim should be defended. For example, Clark and Chalmers' (1998) Parity Principle (PP) states that if bodily external objects play roles functionally equivalent to processes inside the head, and those in-the-head processes are regarded as cognitive, then those bodily external objects should be regarded as playing cognitive roles as well. If Clark and Chalmers are correct, then PP can be used to defend Extended Mind. As this chapter will show, the pivotal role PP plays becomes apparent when we consider what happens when PP is either minimized, as is the case with second wave Extended Mind, or removed altogether, as is the case with third wave Extended Mind, since it can be doubted that either of these two readings are in fact readings of Extended Mind. Third wave, in particular, may need to be understood in entirely different terms. This suggests that if Extended Mind is understood to be a claim about cognitive extension, then PP should be regarded as key to defending that claim.

Keywords

Extended mind · EM · Clark and Chalmers · Parity principle · Second wave · Third wave · Enactivism · Enactivist

Introduction

Take a look at the objects around you. Could those objects be part of your mind? Indeed, where exactly does your mind end and the rest of the world begin? In recent decades, philosophers of mind and cognitive scientists have begun to challenge the intuition that our minds are confined to the insides of our heads.

Consider someone's use of his or her Smartphone. This person may constantly use their phone, easily access the information stored on their phone, and sometimes even automatically endorse this information, like when such information is about the phone numbers of their friends. It might be thought that this Smartphone is just a tool like any other, employed by this person to complete a given task. However, some philosophers of mind and cognitive scientists argue that given the sorts of "glue and trust" conditions just mentioned – constant use, easy access, and automatic endorsement – then a person's Smartphone could be as much a part of this person's mind as anything inside their head (Chalmers 2008). If so, then the Smartphone can, under these particular circumstances, extend the mind of this person. This, so it is claimed, is an example of what is called Extended Mind or EM for short (Clark and Chalmers 1998; Menary 2010a).

As this example illustrates, EM is usually understood to be a claim about cognitive extension, that is, it is usually understood to be the claim that the boundaries of the mind can occasionally extend to include objects in the environment. One reason to think that EM should be understood in this way is that it helps demarcate it from its close conceptual rival, the Hypothesis of Embedded Mind (HEMC) (Loughlin 2018a).

For example, proponents of HEMC, e.g., Adams and Aizawa (2001, 2008) and Rupert

(2004), think that, while objects in your environment, like Smartphones, may be crucial to the completion of certain cognitive tasks, it does not follow that such objects thereby extend the boundaries of your mind. Indeed, claiming that such objects do extend the boundaries of the mind, so say proponents of HEMC, raises a host of metaphysical issues that are best avoided, such as demonstrating that objects in the environment can play a constitutive and not merely causal role in the formation of cognitive processes. If these proponents are correct, then while some objects may help one cognize, it doesn't follow that minds also extend to include such objects. Hence, framing EM as a claim about cognitive extension matters. This is because it clarifies the ways in which EM and HEMC are in fact separate and distinct claims.

Importantly, as this chapter will show, understanding EM as a claim about cognitive extension, in the manner previously formulated, helps zero in on how this claim should be defended. This will be the central theme of this chapter, which can be illustrated in the following way.

Clark and Chalmers (1998) offer what still remains the canonical formulation of EM, according to which claims about cognitive extension are made on the basis of what is called the Parity Principle (PP). PP states that if bodily external objects play roles functionally equivalent to processes inside the head, and those in-the-head processes are regarded as cognitive, then those bodily external objects should be regarded as playing cognitive roles as well. If Clark and Chalmers are correct, then PP can be used to defend EM.

By contrast, Sutton (2010) develops an alternative reading of EM, which he calls "second wave." Following second wave, objects need not have parity with inner cognitive processing but rather can complement and even transform such processing. Second wave thus looks to minimize the role of PP in making the case for EM. However, this leaves it unclear that second wave actually is a reading of EM. Indeed, Sutton seems to concede as much when he acknowledges that second wave might be better understood as a

methodological claim rather than a claim about cognitive extension.

On the other hand, Sutton (2010) also suggests that there could be a possible third wave reading of EM. Kirchhoff and Kiverstein (2018) develop this suggestion in detail, claiming that cognitive processes are dynamically unfolding activities realized by the practices in which agents are enculturated. Third wave thus removes any commitment to PP. Yet this raises further questions as to what exactly extends. One option then is to read third wave, not as a version of EM but rather as an enactivist proposal, although this new reading encounters a problem of its own. Another option is to employ Glaveanu's (2018) notion of the possible. However, doing so reveals the extent to which third wave radically departs from both EM and enactivism.

These considerations highlight the pivotal role PP plays in making the case for EM. For as discussion of second wave and third wave readings demonstrate, once PP is minimized or removed altogether, then it is no longer clear that we are still talking about EM. Hence, if EM is understood to be a claim about cognitive extension, then PP should be regarded as key to defending that claim.

The layout of this chapter is as follows. Section "[Extended Mind](#)" outlines Clark and Chalmers' original reading of EM. Section "[Second Wave Extended Mind](#)" discusses Sutton's proposed second wave reading of EM. Section "[Third Wave Extended Mind](#)" turns to a possible third wave reading, with some reference to Kirchhoff and Kiverstein.

Extended Mind

Although EM has many precursors in the philosophical literature, e.g., Dewey (1916), it was nonetheless first explicitly outlined and defended in a seminal paper by the philosophers Andy Clark and David Chalmers (1998).

In that paper, Clark and Chalmers introduce an idea that has since come to play a defining role in the debate over EM. They state:

If, as we confront some task, a part of the world functions as a process which, were it done in the head, we would have no hesitation in recognizing as part of the cognitive process, then that part of the world *is* (so we claim) part of the cognitive process. (ibid., p. 8 emphasis in original)

For example, consider the game Tetris. As most people know, players of this game must quickly alter the shapes of falling Tetrominoes so that these objects can form a solid line at the bottom of a screen. Players can do this in a number of ways. They can, for instance, mentally calculate how these Tetrominoes should be altered before making the necessary adjustments on the screen. Or they can instead use a physical rotation device to make those adjustments.

According to Clark and Chalmers, manipulating the shape of the Tetrominoes using a rotation device is logically on a par with manipulating the shape of the Tetrominoes inside your head. This is because using such a device forms a process such that were this process done in the head we would regard it as part of a cognitive process. Given this equivalency between use of the device and in-the-head processing, then we should regard the use of this device as part of the player's cognitive processes. Clark and Chalmers employ this example to conclude that, "[c]ognitive processes ain't (all) in the head!" (ibid.).

In subsequent debates over EM, Clark and Chalmers' idea has come to be called the Parity Principle (PP). PP has been challenged in numerous ways (Menary 2010a). However, for the purposes of this chapter, it will be assumed that PP succeeds in making the case for EM. Given this assumption, two aspects of PP can be highlighted.

First, PP is meant to act as a "veil of metabolic ignorance" or an insistence on "equality of opportunity: avoiding a rush to judgment based on spatial location alone" (Clark 2008, p. 114). That is, just because something occurs in the environment need not exclude it from playing a cognitive role. For what matters is not physical location but rather the contribution something makes to an agent's performance of a task. And where there

is parity of contribution, there should be parity of status (Wheeler 2010, p. 248).

Second, if PP is to apply, then objects in the environment and in-the-head processing should be understood in terms what is called their functional role. Functionalism can be defined as the claim that "what makes something a mental state of a particular type does not depend on its internal constitution, but rather on the way it functions, or the role it plays, in the system in which it is a part" (Levin 2008). Crucially, bodily details then only matter to the extent that they fulfill the requisite functional role. So, in the Tetris example, it is not important how the player holds the rotation device or moves their body when manipulating the device. What is important is rather that the device fulfills a role equivalent to in-the-head processing. Once this functional equivalence between outer and inner is attained, then the device can be understood as part of and so extending an agent's cognitive processing.

However, as Clark and Chalmers acknowledge (1998, p. 12), the Tetris example only applies to cognitive processes. No mention has been made so far of mental states. Clark and Chalmers remedy this via the following thought experiment.

Consider two people, Otto and Inga. Otto suffers from Alzheimer's disease and so has difficulty remembering things. In order to offset his poor memory, he always carries with him a notebook. Any time he learns something new, he writes it down in his notebook. Inga, on the other hand, does not have any such difficulty. Her memory functions normally.

Suppose then that Inga hears about an exhibition at the Museum of Modern Art (MoMA). She thinks for a moment about where MoMA is, recalls that it is on 53rd street, and then sets off to visit the museum. Suppose that Otto also hears about the same exhibition and he decides he wants to see it. However, rather than relying on his impaired biological memory, Otto instead employs his notebook. He looks in his notebook, retrieves the address, and then sets off to visit the museum.

According to Clark and Chalmers, both Inga and Otto have an unconscious belief about the location of MoMA. The only difference is that whereas Inga's belief is located inside her head, Otto's belief is partially located outside his head in his notebook. Nonetheless, this difference is not functionally relevant, insist Clark and Chalmers, since "the notebook plays for Otto the same role that memory plays for Inga. The information in the notebook functions just like the information constituting an ordinary [unconscious] belief; it just happens that this information lies beyond the skin" (ibid., p. 13).

In other words, Otto does with his notebook what Inga does with her biological memory. Indeed, Clark and Chalmers conclude that the moral of the Inga-Otto thought experiment is that, "when it comes to belief, there is nothing sacred about skull and skin. What makes some information count as a belief is the role it plays, and there is no reason why the relevant role could be played only from inside the body" (ibid., p. 14). So understood, Otto's mental state, that is, his unconscious belief about the location of MoMA, extends to include the contents of his notebook. Otto is thus an example of EM.

The Inga-Otto thought experiment has generated much debate within the literature on EM (see the introduction to Menary 2010a for an overview). Nonetheless, as with the Tetris example, PP plays a pivotal role in this thought experiment. For it is the alleged functional equivalence between, on the one hand, Otto's use of his notebook and, on the other, Inga's use of her biological memory, that ensures that Otto's mental state, e.g., his unconscious belief about the location of the museum, extends to include the contents of his notebook. Thus, if Clark and Chalmers are correct, then PP can be used to defend EM.

In what follows, the pivotal role PP plays within EM becomes more apparent when we consider what happens when PP is either minimized or removed altogether.

Second Wave Extended Mind

Second wave EM aims to minimize the role PP plays in making the case for EM. Understanding

what drives this desire to minimize PP will help clarify what is second wave EM.¹

Sutton (2010), for example, regards PP as problematic for two reasons. First, he asks us to consider the "individual differences in the amount and style of reliance on external resources [that] are often glaring in the ways people plan and engage in complex activities, such as writing an academic paper, shopping for a party, or chairing a department meeting. Do I memorize the train timetable in advance, or do I just turn up at the station and see?" (ibid., p. 199). This suggests, argues Sutton, that EM is more likely to be true of some people than others, since some people simply make more use of environmental objects or processes than others. But since PP only focuses on "generic features of cognitive states and processes" (ibid.) and so abstracts away from these concrete details, then it looks unable to account for these individual differences.

Second, PP "threatens to flatten out the important differences between cognitive artifacts" (ibid.). For if PP is correct, then the "particular nature of the external resources. . . does not really matter" (ibid.). Yet, according to Sutton, the differences between in-the-head processing and the roles played by bodily external objects may be crucially important. Indeed, these differences may help explain why some objects or artifacts and not others can transform the cognitive processing of agents. However, PP "fails directly to suggest study of idiosyncratic or peculiar features

¹ Section "Second Wave Extended Mind" of this chapter only focuses on Sutton's version of second wave. Another version of second wave not considered here is Menary's Cognitive Integration view (see Menary 2010a, b). This is the view that "internal and external vehicles are integrated into a whole" (Menary 2006, p. 329) and "it is bodily manipulation of the external vehicles themselves. . . where the cognitive work gets done" (Menary 2010b, p. 240). For Menary, cognitive processes are thus hybrid processes that constitutively involve the bodily manipulation of external vehicles. Cognition then is an ability (or abilities) of an agent to manipulate their immediate environment. In light of the discussion in this chapter (see section "Third Wave Extended Mind"), Menary's Cognitive Integration view would seem to be a Third Wave reading and so arguably incurs the problem facing other Third Wave readings, namely that it is not clear that it actually is a reading of EM.

of particular external symbol systems, or particular ways of interacting with them” (ibid., p. 200).

These concerns lead Sutton to argue for a complementarity view of EM. Sutton makes it clear that complementarity “subsumes and takes precedence over [PP]” (ibid., p. 206). Complementarity is the view that, “different components of the overall (enduring or temporary) system can play quite different roles and have different properties while coupling in collective and complementary contributions to flexible thinking and acting” (ibid., p. 194). This is understood to “permit and encourage quite different kinds of interaction and coupling and thus different kinds and degrees of extendedness” (ibid., p. 206). Thus, second wave EM can be defined as an attempt to make the argument for cognitive extension on the basis of complementarity and not parity considerations.

As an example of this, Sutton describes Tribble’s (2005) study of Shakespearean actors at the Globe Theatre. Such actors had to learn new lines in multiple plays in very short spaces of time, often without access to the plays themselves. This raises the following question: “How did the actors cope, and how did the companies rehearse and perform so many different plays under such pressures?” (Sutton 2010, p. 202).

Building on Tribble’s study, Sutton’s answer is that, “in the Globe physical architecture, artifacts, social structure, and the characteristics of the plays themselves combine to support the collective success of the company in performance” (ibid.). This is because, says Sutton, “the Globe’s artifacts worked to get actors to the right place at the right time for further environmental alterations (such as a particular line or event on stage)” (ibid., p. 203). That is, the Globe and its objects or artifacts were structured such that the actors simply had to remember to be at certain places at certain times, at which point lines could be quickly rehearsed and then subsequently performed on stage. Sutton claims that it was thus due to “[the actor’s] mastery of the cognitive resources of their highly structured dramatic environment” (ibid.) that they were able to memorize their lines. In which case, the physical architecture of the Globe can be understood as having complemented the actor’s internal cognitive

processing. Sutton claims that this is an example of Second Wave EM.

Note that on this second wave reading, the physical architecture of the Globe, contra PP, did not play a functionally equivalent role to any cognitive processes inside the actor’s heads. Indeed, given that this architecture is alleged to have transformed what the actors could do, in the sense that these actors could do things within that environment that they could not do outside that environment, then it follows that the architecture must have had properties distinct from in-the-head processing. Second wave thus seeks to minimize the role of PP and instead emphasize how the use of environmental objects or structures can be instances of transformative cognition.

However, as Ramsey notes, this change in emphasis renders second wave EM vulnerable to the following objection:

[w]hat [second wave] authors need, but do not really provide, is an argument for treating external structures as not only important for (and integrated with) cognitive systems during various cognitive tasks. . .but for also treating them as actually mental states. (Ramsey 2010)

This seems true of Sutton’s analysis of Tribble’s study. Recall the Hypothesis of Embedded Mind (HEMC). Sutton’s analysis looks closer to HEMC than EM. For the physical architecture of the Globe may simply have provided the needed prompt for the actor’s learning to take place. Nonetheless, the learning of the lines themselves could still be entirely dependent upon the actor’s internal resources. Importantly, this would be compatible with acknowledging the transformative role played by this architecture, namely, how outside that environment, the actors could not have learned their lines in the way that they did inside that environment. In short, while the physical architecture of the Globe may have scaffolded and in this sense complemented the actor’s internal cognitive processes, it does not follow that those internal processes were also extended to include that very architecture. Ramsey also raises this criticism of Sutton.

If this is correct, then it is not obvious that second wave actually is a reading of EM. Further support for this assessment comes from Sutton

himself, who claims that the advantage of second wave is primarily methodological. Second wave, insists Sutton, is “more an invitation to give detailed attention to these differences in specific contexts and case studies than a fixed new meta-physics of mind” (Sutton 2010, p. 206). Yet if second wave is only a methodological claim, that is, a claim about how and/or in what ways we should investigate cognition, then second wave is not a claim about cognitive extension, that is, it is not a claim about EM. In which case, by attempting to minimize the role of PP, it can be doubted that second wave actually is a reading of EM (Loughlin 2014).

Third Wave Extended Mind

Along with second wave, Sutton (2010) also describes a possible third wave reading of EM:

If there is to be a distinct third wave of [EM], it might be a deterritorialized cognitive science which deals with the propagation of deformed and reformatted representations, and which dissolves individuals into peculiar loci of coordination and coalescence among multiple structured media. . . [T] his third wave would analyze these [inner and outer] boundaries as hard won and fragile developmental and cultural achievements, always open to renegotiation. (2010, p. 213)

Kirchhoff (2012, pp. 291-293) picks out three key themes from the above quote from Sutton.

First, Kirchhoff understands the phrase “deterritorialized cognitive science” to mean a cognitive science whereby the boundaries between what is internal and what is external to an agent are always porous or open-ended. Second, “deformed and deformatted representations” refer to how enculturation, that is, the process whereby human agents become immersed within a sea of cultural norms and values, can transform the human brain, which points towards the inherent plasticity of the brain’s representational capacities. Third, “dissolves individuals into peculiar loci of coordination and coalescence among multiple structured media” suggests that cognition should no longer be understood to be organism centered but rather as something highly distributed, capable of being brought into existence as

and when softly assembled “loci of coordination” are actualized.

These three themes, if accepted, indicate how a third wave reading removes any lingering commitment to PP. For if enculturation points towards the inherent plasticity of the brain, and cognition is no longer understood to be organism centered, then the role that objects or artifacts play in an agent’s performance of a task cannot be understood in terms of their equivalence to in-the-head processing. Indeed, if agents themselves are highly distributed, softly assembled loci of coordination, then the very idea that we need to look inside the head to determine what is part of the mind is a nonstarter.

However, this removal of PP raises a key issue for a third wave reading. For what happens when you decentralize cognition in this particular fashion? Kirchhoff and Kiverstein (2018) offer a possible answer to this question.

According to Kirchhoff and Kiverstein, a third wave reading begins by rejecting any notion that the properties of what is bodily internal to the agent and/or what is bodily external to the agent are fixed and/or static. Instead, “through ongoing participation in culturally organized activities with other people” (ibid., p17), agents are transformed such that what is internal to the agent is reformed and reformatted “through a network of practices in which the individual participates” (ibid., p17). Cultural practices then are not simply background conditions in the formation of an agent’s various cognitive processes. Rather, cognitive processes are themselves constituted diachronically, for they are “dynamic and temporal trajector[ies] of activity” (ibid., p21) always forged within wider practices.

This then impacts on the agents that embody those activities. Gone is the idea of lone individuals recruiting objects or artifacts in their environments in order to complete certain tasks (think of Otto and his notebook). Instead, agents are now widely constituted “bio-cultural system[s]” (ibid., p20), realized as much by the practices in which they are enculturated as by anything happening inside their heads.

In order to illustrate this, consider the following example (which is not taken from Kirchhoff

and Kiverstein). Suppose you sit down at a desk with a blank sheet of paper in front of you. You have decided to write a letter to a close friend. However, you have no clear idea about what you want to say or how you want to say it. You begin, “Hi Catherine.” You write a few words but you cross them out. You then write a few more, which you subsequently keep. In this hesitant back-and-forth between writing and editing, what you want to say slowly starts to emerge from what you write. This is how the letter is written.

Following the sort of third wave reading of EM just described, when composing the letter in this manner, your cognitive processing is decentralized, in the sense that you only loosely coordinate what is happening, hence why what you want to say can slowly emerge from what you write. But if so, then your processing cannot be sourced to any one moment. Instead, your cognitive processing is a dynamical process, that is, one that unfolds and develops over time. Moreover, this dynamical process is only possible because of your enculturation within a wider practice, namely the practice of using pen and paper to compose letters to friends. Indeed, it is your very enculturation within this practice that makes you a cognitive agent and so makes what you are now doing a cognitive activity.

Recall then the doubts previously raised as to whether or not second wave was an example of EM. There it was claimed that second wave might be better understood as a version of HEMC (see section “[Second Wave Extended Mind](#)”). The same worry, however, does not apply to third wave. For if wider cultural practices can play constitutive roles in the formation of agents and their cognitive activities, then third wave cannot be read as a version of HEMC. Environments, according to third wave, do much more than simply embed minds.

However, another issue presents itself. Following a third wave reading, you are not a lone individual recruiting objects or artifacts in your environment in order to complete certain tasks. You are instead realized by the practices in which you are enculturated. But if so, then it no longer makes sense to think of “you” as some bounded entity. You are instead, to borrow Sutton’s words,

a “loci of coordination,” softly assembled and distributed across multiple media. And what applies to you must also apply to your mind. Yet if your mind can no longer be understood as a bounded entity, then what exactly extends? Indeed, if agents and their minds are highly distributed and decentralized, as some proponents of third wave contend, then all talk of extension begins to look otiose. It is thus not clear that third wave actually is a reading of EM.²

How then should third wave be read? One option is to read third wave as an enactivist proposal.

Enactivists prioritize the role of action, and so enactivism can be understood to be a branch of action research. Most enactivists accept that mind and experience are essentially dynamical processes realized as and when agents interact with and/or have interacted with their environments. However, there is little agreement among enactivists as to how this proposal should be developed. Some root it in the autopoietic nature of autonomous systems and their sense-making activities (Thompson 2007). Others focus instead on the role of what are called “sensorimotor contingences” enacted during perceptual experience (O’Regan and Noë 2001; Noë 2004; Loughlin 2018b, 2019). Still others examine social and linguistic practices and how they can scaffold distinctive forms of human thought (Hutto and Myin 2013, 2017). Given that third wave views the mind in terms of dynamically unfolding activities, then it is plausible to frame such a view as akin to one or perhaps a number of these competing enactivist proposals.³

²Note that this criticism of third wave does not consider many of the details of Kirchhoff and Kiverstein’s defense of Third Wave Extended Mind. For example, they appeal to predictive processing models of the mind and the role such modeling can play when considering whether or not the boundaries of the mind extend. However, determining whether or not these details can in fact resolve the criticism raised here is beyond the scope of the present chapter.

³Someone who pursues this line is Gallagher (2017). Indeed, Gallagher proposes to bring EM and enactivist views into alignment via a third wave reading of EM. Gallagher also shows the interesting overlap between EM and the work of various American Pragmatists. However, following the discussion in this chapter (see section “[Third](#)

An objection to this, however, may be that most enactivists view mind and experience as first and foremost organism centered, although not of course as organism bound. Yet this looks in opposition to third wave's insistence that cognition is not organism centered (Ryan and Schiavio 2019). If this objection is correct, then it may not be clear how third wave should be read, neither as version of EM nor as a version of enactivism.

Another option then is to frame third wave EM in terms of Glaveanu's (2018) notion of the possible. This could be an instance of using the notion of the possible in philosophy. If so, then minds could be understood to be, in Glaveanu's words, "creative actions...[that] open up, exploit and expand the possible for both self and others" (ibid., p. 12). Minds thus neither extend to include objects in the environment nor are enacted via engagement with those objects. Rather, by being enculturated within wider practices, minds are those horizons and potentialities created by those very practices. Recall the previous letter example. It is only by being enculturated within a practice of writing letters that what you think, feel, desire, etc. can emerge out of and so be softly assembled by your act of composition. However, if framed in these terms, then third wave EM is indeed radically distinct from both EM and enactivism.

Summary

Extended Mind (EM) is usually understood to be a claim about cognitive extension, that is, it is usually understood to be the claim that the boundaries of the mind can occasionally extend to include objects in the environment. The central theme of this chapter has been that understanding EM in the above fashion helps zero in on how this claim should be defended.

For example, Clark and Chalmers' Parity Principle (PP) can be viewed as playing a pivotal role

in defending EM. For as both second wave and third wave readings reveal, once PP is minimized, as is the case with second wave, or removed altogether, as is the case with third wave, then it is no longer clear that we are still talking about EM. Hence, if EM is understood to be a claim about cognitive extension, then PP should be regarded as key to defending that claim.

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Wave Extended Mind”), it could be argued that there are problems both with linking third wave with EM and with linking it to enactivist proposals.

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F

Fahrenheit 451

Rafeeq O. McGiveron

Lansing Community College, Lansing, MI, USA

Keywords

Bibliophile · Book · Book-burning · Books · Censorship · Inhumane · Inhumanity · Mass exploitation · Minority pressure · Pleasure · Pleasures · Possible · Possibilities · Possibility · Pressure groups · Science · Technical · Technological · Technologies · Technology · Television · Televisions · Televisor · Televisors · Thought · Thoughts · TV

Definition

Ray Bradbury's 1953 *Fahrenheit 451*, with the complacency of its television-anesthetized society being guarded by book-burning "firemen," is an exploration of the possible that, despite the passage of decades, still delights, terrifies, and enlightens just as much as it did generations ago, for the human mind of today – or tomorrow – holds much the same peril and the same promise it always has. This cultural touchstone simply cannot – and of course *should* not – be ignored. The modern world, after all, still is witness to ever-accelerating technological advances that can make life easier and faster, debates so polarized and exhausting that both distributors and

consumers of entertainment recoil warily from the wrath of pressure groups and even the mere struggle of argument, and the mass exploitation of myriad diversions that can lure so much more enticingly than the duties of intellectual and moral responsibility. Yet Bradbury's masterful *Fahrenheit 451* will continue to warn discerning readers of the lurking possibility of the easy slide toward inhumanity, the decline of thought, and censorship even as it celebrates the possibilities of the human – and humane – mind.

Introduction

Ray Bradbury's 1953 *Fahrenheit 451*, with the complacency of its television-anesthetized society being guarded by book-burning "firemen," is an exploration of the possible that, despite the passage of decades, still delights, terrifies, and enlightens just as much as it did generations ago. Why? Because even as technologies come and go, politics move pendulum-like with changing social mores, and global power structures shift like the breakup of Pangea, truly there is no new thing under the sun, and the human mind of today – or tomorrow – holds much the same peril and the same promise it always has. The disturbing possibilities highlighted by *Fahrenheit 451* thus make it a book that readers cannot help reading, pundits cannot help pointing to, critics cannot help analyzing, and teachers cannot help assigning. For good reason, this cultural

touchstone simply cannot – and of course *should* not – be ignored.

Kingsley Amis famously termed *Fahrenheit 451* “a fast and scaring narrative” (94). At about only 50,000 words, the slim little novel is swift partially due to a style that sometimes “hustle[s] the reader through with either crisp brevity or irresistible monosyllables” (McGiverson, 2013a, 12) and at other times uses rollicking long sentences with gusto. The speed also stems from structural choices – the lack of conventional chapters, for example, and the construction of “easily digestible scenes...leading easily from one to another” – resulting in “something of a narrative slippery slope effect” (McGiverson, 2013a, 4). Such swiftness accentuates the “scaring” nature of the plot, and yet the truly terrifying aspect is how plausible almost everything in the book is, how very possible.

Technology As Possibility

The portrayal of technology in the novel is interesting to investigate through the lens of the possible. Although Bradbury, in the words of Marvin E. Mengeling, “is no reactionary, antimachine ‘nut’” (98), neither does his fiction usually display or explore technology with much rigor. Indeed, amid the modern world of the near future, the “trappings” of fairy tale, such as the “crystalline description[s]” (115) that Eric S. Rabkin notes in *The Martian Chronicles*, occur in *Fahrenheit 451* as well, as does noticeable imagery involving other traditionally ancient fairy-tale materials. Crystal itself, for example, can be seen in the construction of pill bottles (Bradbury 43), television screens (Bradbury 76, 122), and homemade radio apparatus (Bradbury 118), along with a metaphorical chandelier (Bradbury 121) and a simile for the face of Clarisse, the teenaged next-door neighbor who so inspires unknowingly disaffected fireman Guy Montag (Bradbury 37). The ominous firehouse, “full of glitter and shine and silence,” is described as a place “of brass colors, the colors of coins, gold and silver” (Bradbury 62). The nozzle of Montag’s kerosene-spewing fire hose depicted on the very

first page of the novel is brass (Bradbury 33), as are the firehouse pole (Bradbury 54, 55, 65, 133, 137), the firetruck’s kerosene tank and its identifying numbers as well (Bradbury 137, 138), the pipe of the avuncular yet sinister Fire Captain Beatty (Bradbury 83), and the slot to the handy household incinerator in Montag’s home (Bradbury 129). Fairy-tale silver – though the color rather than the metal itself – gleams not only in the reflection in Montag’s brooding moonlit eyes (Bradbury 47), but also as a replacement for the more modern steel or chrome surely being seen in Montag’s apparently regulation-issue igniter disc (Bradbury 43), the robotic toaster of in his kitchen (Bradbury 48), firemen’s hatchets (Bradbury 66), the firetruck rail (Bradbury 137), and the procaine needle of the Mechanical Hound that hunts down any dissidents (Bradbury 55). These materials are the stuff of fairy tales – seen in glass coffins, brass armor, silver swords, and the like – but they also are old-fashioned, and they do not cause readers estrangement as the use of truly novel and futuristic materials might. Instead, such familiar, even anachronistic descriptions in the book’s science-fictional setting help ease readers into the plot, which in many ways already is so frighteningly possible.

When Bradbury does showcase technology in this science fiction novel of a near-future United States, he uses no gleaming rocketships for flying to porcelain Martian chess-men cities, no time machines, or no footpaths of antigravity metal for hunting tyrannosaurs. His technological markers of a future imagined from 1953 often stay much closer to home, such that the reality of the possible has caught up with them fairly quickly. The tiny “Seashell Radios” tamped into people’s ears to drown out the world with music or with game shows that fill audiences “so damned full of ‘facts’ they feel stuffed, but absolutely ‘brilliant’ with information” (Bradbury 90), for example, are the wireless earbuds of today. The full-wall television screens that cost a third of the yearly salary of a fireman such as Montag (Bradbury 50) – and which often cover three or even four walls of a rectilinear living room, so totalizing that any program “rushes you on so quickly to its own conclusions your mind hasn’t

time to protest, “What nonsense!” (Bradbury 112) – are only a notch or two up from either our current big-screen versions or the more expensive home theater systems, and almost all adult and even adolescent Americans now carry a device that, among other uses, will function as the once-miraculously miniaturized “portable viewer” (Bradbury 173) or the “television screen the size of a postal card” (Bradbury 158) used by those dogged few characters in the novel who are not addicts to complete television immersion. The stomach-pumping made necessary in the novel by the fast-paced society’s all-too-common overdoses is, as the uninterested technician explains, an “ancient” process (Bradbury 45), but it utilizes, essentially, an endoscopic camera and helmet-mounted virtual reality display (Bradbury 44) that are only fractionally more advanced than similar equipment of today. Even Bradbury’s imagining of “robot tellers” (120) dispensing money at the all-night banks of this restless future society predates the now-commonplace automated teller machine by only a decade or two, and while the fingerprint reader in “the glove hole of [the] front door” (Bradbury 40) is not yet common in the real world, the novel’s automated door announcer (Bradbury 82, 97, 100) actually is not as sophisticated as the front door video security apparatus of many modern-day homes. Thus, although Bradbury has extrapolated technical advances into a suitably science-fictional future, he generally has not made them *too* advanced.

Occasionally, though, the book does toss out certain flashier pieces of technology. Perhaps the most tangential is the kitchen toaster incorporating “a spidery metal hand” that automatically butters and then serves the toast (Bradbury 48). Another, a similar minor throwaway item, but one a bit more central to the plot, is the extra “converter attachment” that – for an extra charge, naturally – helps personalize the ubiquitous wall-sized television screens by making an announcer say the viewer’s name as its “special spot-wavex-scamblers also cause[s] the televised image, in the area immediately about his lips, to mouth the vowels and consonants beautifully” (Bradbury 93). Another technological achievement integral to Bradbury’s themes is the jet car, which thrill-seekers might

“race on the edge of town at midnight and the police don’t care as long as they’re insured” (Bradbury 50). A similarly science-fictional machine of transportation, less “sexy” than a jet car and yet probably more difficult to engineer, is the “vacuum-underground” (Bradbury 106), or “air-propelled train” of the subway (Bradbury 34). The public might have “motorcycle helicopters” (Bradbury 91), while even more ambitiously designed police vehicles turn from cars to helicopters and back to cars again as needed (Bradbury 150–151). Some of this, obviously, is pure whizz-bang fluff. In addition, although American jet bombers have passed overhead ominously in the night a number of times during the novel, as common to its characters as swept-wing B-47s flying in and out of Strategic Air Command bases might have been to the book’s original Cold War readers, there also is a single reference to the cryptic “enemy disks” (Bradbury 120), and when war finally comes, the enemy’s nuclear bombs fall from hypersonic jets flying 5000 miles per hour (Bradbury 183), a figure that seems chosen both as an echo of the big round numbers of fairy tale and also as a futuristic tenfold increase over then-current speeds. Such pieces of technology, each of which, except for the jet car, is mentioned literally only once or twice in the novel, help engender a science-fictional sense of delight without casting the reader into a future seeming too strange or beyond the possible.

Even the ghastly Mechanical Hound, which appears several times in *Fahrenheit 451* and which, even more than the book’s ubiquitous immersive televisions, may be its most memorable technological artifact, is presented with this dual perspective. On the one hand, almost nothing else could be as friendly and reassuring as the resident dog of an old-fashioned firehouse. And even though this roboticized simulacrum sometimes is discussed “in terms of modern materials, like steel and nylon and rubber” (McGivern, 2013a, 12), it also reflects the fairytale materials of “ruby glass” and brass and copper (Bradbury 54), and at the same time that it emits a modern “electrical sizzle,” it also gives off a quaintly old-fashioned “scraping of metal, a turning of cogs that [seem] rusty and ancient with suspicion”

(Bradbury 55). On the other hand, the Hound truly is the height of robotic science. With its snout sensors that can sniff out the “chemical balances and percentages” of a particular human body, the Hound “targets itself, homes itself, and cuts off” (Bradbury 56)... the shutdown occurring only after it has “inject[ed] massive jolts of morphine or procaine” (Bradbury 55) into the bibliophile who had escaped the police or the firemen. The Mechanical Hound is science-fictional whizz-bangery of the most horrifying sort, and yet even now, the possible has almost caught up with Bradbury’s fiction, with legged robots being researched for military applications (DARPA), as is the next step of developing autonomous vehicles and weapons controlled by their own artificial intelligence (Lockheed Martin).

Social Decline As Possibility: Causes

The truly terrifying aspect of *Fahrenheit 451*, of course, is not that its imagined technology will become possible – aside from the fact that much of it has, after all – but that the attitudes of its society will grow widespread in the real world as well. It can be very easy to blame technological advances, particularly the television in its ever-larger incarnations, for turning a past of curiosity and freedom of thought into a future of willful ignorance and repression. Robert Reilly, for example, terms the novel “a frightening picture of how the products of science can destroy persons and human values” (67). Such blame is slightly misplaced, though. After all, does technology itself actually decide what and how people will think? No – technology may help open or close certain possibilities, but it itself does not do the thinking or make the decisions in our personal, political, and moral lives. Captain Beatty, in a memorable discussion at Montag’s sickbed after the target of their most recent raid has burned herself to death before them rather than abandon her collection of forbidden books and magazines, explains that for helping create a society that has replaced thought with complacency, “[t]echnology, mass exploitation, and minority pressure carried the trick, thank God” (Bradbury 87). Any discussion of the true

warning of *Fahrenheit 451* should examine these threats with care.

Technology

The technological acceleration of the modern era helped lead, Beatty tells Montag, to what with wonderfully bland irony he terms their “happy world as it stands now” (Bradbury 91), a world of compulsive pleasure-seeking... and yet also endemic suicide, violence in the streets, and the unacknowledged threat of yet another nuclear war. Contrasting the “slow motion” of the “Nineteenth-century man with his horses, dogs, carts” with their own faster-paced world in which all “unnecessary, time-wasting thought” has been cast off (Bradbury 85), the suave Fire Captain asserts aphoristically that “The zipper displaces the button and a man lacks just that much time to think while dressing at dawn, a philosophical hour, and thus a melancholy hour” (Bradbury 85). This sounds very persuasive, and the world of jet cars, flying motorcycles, and traffic blasting “a hundred miles an hour” not just through the countryside but even “across town” (Bradbury 76) initially seems to show technology run amok.

Yet Faber, the former English professor who ultimately mentors Montag in the fireman’s quest to understand what it means to be truly human, shows that Beatty’s evaluation is not quite correct. Regarding the ubiquitously yammering televisions, for example, although Faber admits that even he “ha[s] never been able to argue with a one-hundred-piece symphony orchestra, full color, [and] three dimensions” of a multiwall television room (Bradbury 112), still he owns a tiny television he can “blot out with the palm of [his] hand” (Bradbury 158). The book-memorizing intellectuals Montag meets after his escape from the city are similar, keeping a small “portable battery TV set” (Bradbury 173). Crucially, when Montag first tells Faber, “We have everything we need to be happy, but we aren’t happy,” the disenchanted fireman naturally supposes that “books might help” (Bradbury 110), but the professor corrects him: “The same things *could* be in the ‘parlor families’ today. The same infinite detail

and awareness could be projected through the radios and televisions, but are not” (Bradbury 110–111). The issue, then, is not a matter of technology itself but one of humane or inhumane use.

Really, almost none of the gadgets of *Fahrenheit 451* is innately harmful, and they all could be put to humane uses as readily as they are to inhumane ones. As Faber implies, the “infinite detail and awareness” inherent in modern electronic mass communication could be used for education rather than as intellectual anesthetic: in investigative journalism, in documentaries on topics from art to history to nature, and in educational children’s programming. In terms of the so-called education of public school, Clarisse describes “[a]n hour of TV class” and “four more hours of film teacher,” but although in the novel “they just run the answers at you, bing, bing, bing” (Bradbury 59), it does not have to be this way. College courses today, after all, occasionally use similar technology for delivery through videoconferencing or even with the less advanced option of noninteractive-recorded lectures, and presumably these are attempts to foster true learning rather than simply ensuring that students “never ask questions” (Bradbury 59); in the words of Faber, this higher goal *could* be pursued in the novel but is not. In fact, even the novel’s most insidious pieces of technology have these dual potentials. The Mechanical Hound could have been programmed for search and rescue operations instead of State-sanctioned murder, for example, and nuclear fission could have been used in power plants to generate electricity rather than in bombs designed to destroy cities or, at worst, in weapons reserved for deterrence rather than being the first choice for a nation that has “started and won two atomic wars since 1960” (Bradbury 101). The possibilities lead both ways.

Minority Pressure

If technology is more an enabler rather than an actual cause of the decline of thought in *Fahrenheit 451*, Captain Beatty’s discussion of “minority pressure” as a cause – the term *minority* indicating any type of group rather than only racial or ethnic

ones – is more convincing, and rightly so. Whereas Bradbury in stories of just a few years prior to *Fahrenheit 451* depicted censorship as being motivated by “the rather . . . juvenile bogeyman” (McGiverson, 2017, 55) of a government that for some reason wants to ban fantasy literature, Christmas, and Halloween, here he has moved beyond what a government may force upon the populace to the pressures of the market and to public taste or lack thereof. As Beatty explains, “The bigger your market, Montag, the less you handle controversy, remember that! All the minor minor minorities with their navels to be kept clean. Authors, full of evil thoughts, lock up your typewriters. They *did*. Magazines became a nice blend of vanilla tapioca. Books . . . were dishwater. No *wonder* books stopped selling. . .” (Bradbury 87).

The occasional narrowing of discourse due to a shying away from controversy or the reactions, real or imagined, of readers or audiences can be seen in our own world, of course. On the one hand, for example, it is difficult to argue against replacing old titles like *mailman* and *policeman* with *mail carrier* and *police officer*, since these professions indeed are no longer male-only. On the other hand, political correctness sometimes is stretched so far that even a mere differing opinion is labeled indignantly as hate or as the increasingly popular [*insert category here*]-shaming. In these latter instances, when writers or publishers in trying to avoid backlash simply refuse to present certain topics or opinions, “the damage of minority pressure is caused primarily by intolerant pressure groups and secondarily by the controllers of communication who follow their wishes,” with audiences and readers often being “unaware that pressure groups influence what they watch, hear, and read” (McGiverson, 1996, 249). When discourse of a potential controversy is not even presented due to fear of reaction from proponents of whichever side of an argument it may be, members of a society have little motivation to explore further.

Mass Exploitation

Mass exploitation, however, is a far different matter, for the masses cannot be exploited except with

some degree of willingness. It is one thing not to know, after all, but it is quite another to *choose*. “Serenity, Montag,” croons Beatty. “Peace, Montag. Take your fight outside. Better yet, into the incinerator” (Bradbury 89). Yet although avoiding the discomfort of contentious debate about politics, foreign policy, social issues, and the like may be the public’s occasional response to argumentative or offended pressure groups, the threat to thought is not just the public’s flight from intellectual challenge but its actual *chasing after* mind-numbing entertainment of perhaps less than zero worth – less than zero in that the surfeit of easy gratification makes the mind ever less accustomed to anything but the quickest and simplest of pleasures. In his pep talk trying to reinspire Montag to the life of burning, Beatty rhetorically asks “[w]hat. . . people want in this country, above all,” and then provides an answer as grim and dehumanizing as it is manically pleading: “People want to be happy, isn’t that right? Haven’t you heard it all your life? I want to be happy, people say. Well, aren’t they? Don’t we keep them moving, don’t we give them fun? That’s all we live for, isn’t it? For pleasure, for titillation? And you must admit our culture provides plenty of these” (Bradbury 89). Titillation and pleasure, of course, are the *only* things this culture provides, for back when the public still had a choice, they were the only things people ended up buying.

According to Beatty, the “publishers, exploiters, broadcasters” of the pre-censorship days “pump[ed]” the “centrifuge” of mass communication, narrowing down the content of their wares further, ever further, until nothing of consequence was left: “Digests-digests, digests-digests-digests. Politics? One column, two sentences, a headline! Then, in mid-air, all vanishes!” (Bradbury 85). Yet this narrowing is not something forced upon a public hungry for information and intellectual challenge; the public itself must *desire* its television walls to show “pretty colors running up and down. . . like blood or sherry or sauterne” (Bradbury 86) rather than, say, Edward R. Murrow. As Beatty points out even when ostensibly discussing the effects of pressure groups, the contents of printed and electronic

media are greatly dependent upon “the market” (Bradbury 87), in which readers and viewers choose what to engage, whether challenging and uplifting or mind-atrophying, by voting with their dollars. By the time of the novel, readers have chosen only “comics, the good old confessions, . . . trade journals,” and “the three-dimensional sex magazines, of course” (Bradbury 87), along with television that brings only soap operas so cheap and slipshod that “*nothing’s* connected up” (Bradbury 75), surreal visual flights of almost psychedelic fancy, cartoon characters dismembering each other “to the accompaniment of immense incoming tides of laughter,” and jet car demolition derbies where wildly thrown bodies delight the audience at home (Bradbury 122).

Thus, although the American government in *Fahrenheit 451* has turned to censorship to hold off “the small tide of those who want to make everyone unhappy with conflicting theory and thought” (Bradbury 91), Beatty’s discussion of minority pressure and, more important, mass exploitation shows that the original impetus “didn’t come from the Government down. There was no dictum, no declaration, no censorship to start with, no!” (Bradbury 87). Lest readers imagine that the slippery Beatty is not to be trusted here, later in the plot Bradbury has Professor Faber confirm the judgment. Although Faber “saw the way things were going, a long time back,” he “did not speak up and out” (Bradbury 110). “How like a beautiful statue of ice it was, melting in the sun,” laments Faber of a culture that once valued thought and curiosity, with “the newspapers dying like huge moths. No one *wanted* them back. No one missed them” (Bradbury 117). Indeed, “[t]he public stopped reading of its own accord,” according to Faber, and now the book-burning firemen are “hardly necessary to keep things in line” (Bradbury 115).

When “[s]o few want to be rebels anymore” (Bradbury 115), and “the public, knowing what it want[s], spinning happily” (Bradbury 87), simply wallows in mindless television and drugs and “more of everything to do with automatic reflex” (Bradbury 91) rather than actually examining itself and the world around it, American society

has no hope of being saved from within. Only nuclear war, the rather smaller and not completely world-annihilating kind that was becoming less and less possible to imagine even as *Fahrenheit 451* was being written, can free people from the hedonistic trap they have created for themselves. Initially, as war looms, Faber is doubtful that the covert groups of dissident book-memorizers will accomplish anything useful in the postwar world: “What? Men quoting Milton? Saying, I remember Sophocles?” (Bradbury 116). On the literal eve of the enemy attack, however, with Montag exposed as a bibliophile criminal, and on the run after having escaped by killing Beatty, the once-tired Faber is “alive for the first time in years” (Bradbury 157). Readers may have doubts about whether Montag and the wandering group of book-memorizing former professors who take in the fugitive truly would be able to rebuild a better world from the postnuclear ashes, but Bradbury’s conclusion, with its Biblical references of “[a] time to break down, and a time to guild up” and the “*tree of life*” whose “*leaves . . . [are] for the healing of the nations*” (Bradbury 190), shows that this hope is what he intends. With the histories, literatures, and philosophies of the past remembered once more, Montag’s group hopes to break the self-destructive cycle of the phoenix, for unlike that mythical bird, humanity can “know all the damn silly things we’ve done for a thousand years” and thus perhaps can learn to “stop making the goddamned funeral pyres and jumping in the middle of them” (Bradbury 189).

Summary: The Possibilities Now

How possible is the nightmare world of *Fahrenheit 451* now, really? On the one hand, it seems extraordinarily unlikely that full-fledged censorship of the Nazi-esque book-burning variety would be instituted in the United States, or even that the Great Firewall of China would be replicated here to rein in our wildly freewheeling Internet. Although our technological advances have mostly caught up with those of Bradbury’s warning tale that from the perspective of 1953

“look[ed] only a century or less into the future” (McGivern, 2013b, 73), after more than 75 years we still have not descended into the disconnected inhumanity portrayed in the novel. Perhaps some of this is due to the widely read *Fahrenheit 451* itself. Although other classic dystopias such as George Orwell’s *1984* (1949) and Aldous Huxley’s *Brave New World* (1932) cannot help but remain entertaining and enlightening, it has always been *Fahrenheit 451*, whose plot is grounded not in ruthlessly repressive dictatorship or in a far future seeming-paradise maintained by the dehumanizing caste structure of merciless genetic programming but in the familiar realities of American society, that warns of perils still so very possible.

The modern world, after all, still is witness to ever-accelerating technological advances that can make life easier and faster, to debates so polarized and exhausting that both distributors and consumers of entertainment recoil warily from the wrath of pressure groups and even the mere struggle of argument, and to the mass exploitation of myriad diversions that can lure so much more enticingly than the duties of intellectual and moral responsibility. And whether tomorrow’s political factions are the Republicans and the Democrats or the Ins and the Outs, and whether computers of the future are worn on the wrist or woven from nanofibers along our own nervous systems, Ray Bradbury’s masterful *Fahrenheit 451* will continue to warn discerning readers of the lurking possibility of the easy slide toward inhumanity, the decline of thought, and censorship even as it celebrates the possibilities of the human – and humane – mind.

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Feminisms

Zayda Sierra¹ and Ximena Amariles²

¹Unipluriversidad Research Group, Faculty of Education, University of Antioquia, Medellín, Colombia

²Gender, Subjectivity and Society Research Group, Faculty of Social and Human Sciences; Unipluriversidad Research Group, Faculty of Education, University of Antioquia, Medellín, Colombia

Abstract

Feminism is a very transforming unarmed revolution of the twentieth century, still facing new and complex challenges in the twenty-first century (Chesler and Hughes 2004; Coronado 2017; Fernández 2018). It encompasses women’s struggles – half of the population of the planet – against the historical violence and oppression exerted by patriarchal dominant structures in different geographical contexts and aspects of

the existence: family, work, political, economic, academic, urban, rural, among others. Feminism strives for making visible and valuing the roles that diverse women play in society, promoting the recognition of their human rights and proposing other ways of thinking, inhabiting, and acting in the world. It has brought key concepts and methodologies to light, transforming different fields of knowledge in social sciences, politics, economics, and health research, among others, with important contributions to the development of public policies.

However, feminism achievements are far from being attained, especially by poor and racialized women from the Global South. The *South* understood here not as a geographical concept – even though the great majority of impoverished populations live in countries of the Southern hemisphere – “but as a metaphor of the human suffering caused by capitalism and colonialism at the global level, as well as the resistance to overcome or minimize such suffering” (Santos 2012:43). Thus, feminisms from the South emerge in plural from different anti-colonial and anti-racist movements, in which exploited and racialized women struggle for just and equitable societies. In this chapter, we want to call the attention on how Latin American women from Indigenous, Afro-descendant, and Peasant Mestizo origin are creating other possible ways of relating in society and with nature by: (1) debriefing the sequels of colonialism and racism in their personal, community, and societal lives; (2) bravely facing current predatory approaches to nature from hegemonic extractives economies, which are destroying community territories and displacing their inhabitants from the access to water and land; and (3) actively questioning and transforming patriarchal traditions at the interior of their own families and communities.

Keywords

Decolonial feminism · Feminisms from the South · Women’s rights · Patriarchy · Social transformation

Feminism – Facing Centuries of Exclusion: A Brief Overview

Time has come to stop the severe laws of men preventing women from studying science and other disciplines. (Christine de Pisan in 1405, cited by Pérez Sedeño 2000: 1)¹

If women' voices had been taken into account, the world today would be wiser. We would have learned from the wisdom of the nine million women burned by the Inquisition, who were so knowledgeable that were condemned as witches. (Nuria Varela 2005: 173)²

Feminism is not, as popularly believed, a social movement against men but against *patriarchy*, the political, economic, religious, and social organization based on the idea of authority and leadership of men over women, husband over wife, father over mother and children, and the line of parental descent over the maternal one. Patriarchy emerged as a historic seizure of power by men, who appropriated the sexuality and reproduction of women and their offspring, while creating a symbolic order through myths and religion that naturalized and perpetuated *androcentrism*, the masculine point of view, as the measure of all things, while the feminine – and the woman – was undervalued (Bachofen 1998; Beauvoir 1998; Castells 1998; Varela 2005).

The European and Anglo-Saxon nations – which erected themselves as superior to other peoples and cultures from America, Africa, and Asia since the sixteenth century – came themselves from ancient androcentric traditions that considered women as inferior. Women were persecuted during the Inquisition, an authoritarian regime supported by the Catholic Church but also by the Protestants in Europe and abroad. Nonetheless, Bacon, “the father of modern science,” considered Nature to be the bride, the one who needs to be dominated, shaped, and subdued by the mind of the scientist, characterized by his virility and masculinity, different from the female creature, portrayed as “passive, weak, expectant” (Keller 1991).

The Enlightenment was no more generous: the precursors of universal freedom and equality, promoted during the French Revolution, excluded women from the newly acquired political rights and ordered the dissolution of women's clubs where they were discussing their rights to education, work, and voting, and against the abuses within marriage. In 1793, Olympe de Gouges, who had published 2 years before the “Declaration of the Rights of Women and the Citizen,” was guillotined (Varela 2005). Both in Europe and in its colonies, women's access to academic institutions was not allowed until the end of the nineteenth century and in some countries until the middle of the twentieth century; the same for the right to vote, to freely choose a partner or get divorced, and publicly lead business and government instances (Arnot 1995; Harding 1996, 2000).

The expansion of capitalism and industrialization during the nineteenth and twentieth century demanded a greater workforce that was supplied by women. However, their participation in the labor market was not reflected in women's attainment of (1) *civilian rights* such as freedom of the person, expression, thought, and belief; the right to property and to enter into valid contracts; (2) *political rights* to participate in the exercise of power through political representatives or as voters; and (3) *social rights* to a minimum of welfare, fair salaries, and economic security, among others (Arnot 1995; Estevez 2018). Of course, these rights were (and still are) almost impossible to achieve for enslaved, exploited, or impoverished women.

As incredible as it may seem, it is up to the final decades of the twentieth century that women's movements began to see the suppression of many forms of exclusion from political, educational, and scientific institutions. Women were gradually entering into predominantly masculine fields of action and knowledge such as mathematics, engineering, or biomedical sciences. Still, their equal participation in politics, academics, or leading organizations is limited (ONU 2018). The matter is not only numerical: the referential framework of knowledge, action, and power remains androcentric, racist, and sexist (Hill

¹ Our translation to English from Spanish.

² Our translation to English from Spanish.

Collins 2012). However, as Harding (1996) pointed out, women feminist academics have been the ones noticing the androcentric biases in the scientific work, both in the definition of scientific problems as well as in research concepts, theories, methods, and interpretations.

Diverse Feminisms: Common and Different Struggles

To better understand feminisms from the South, it is precise to acknowledge that the feminist movement is not a monolithic program. It has contributed to enhancing the conception and implementation of women's human rights but from different historical moments and approaches. For example, the *liberal feminism* emerged in Western society from women's struggle for equal rights in all social, economic, and institutional spheres, from the suppression of labor discrimination to their increasing participation in public life. To them we acknowledge the recognition of sexual and reproductive rights, the creation of special provisions for the care of young children, as well as the facilitation of women's access to educational institutions and academia (Castells 1998; Varela 2005). However, from *feminism of the difference or radical feminism*, some scholars argued that women's greater inclusion in fields of male domination was not confronting and transforming the patriarchal society. This discussion deeply re-signified the notion of *gender* as a cultural construction, non-biological, further challenging the historical determinism that reduced women's role to the "feminine" domestic, male satisfaction, and reproductive sphere. It also unveiled the poverty and discrimination of women from diverse ethnic, racial, linguistic, and sexual groups, and their struggles to get them visible within society (Hooks 1984; Arnot 1995; Lamas 1996; Estevez 2018).

Questioning the patriarchal imperative has also inspired men's movements towards transforming the authoritarian and pathological views of a masculinity that has inhibited their expression of affection and feelings, as well as the possibility

of exercising non-oppressive power. Feminism, by questioning the biological determinism, has also contributed to rethink the notion of "masculinity" and the emergence of "**new masculinities**" against the oppressive relationship over women imposed on men by patriarchy (Hooks 2004; García 2015). There is a growing number of men working on deconstructing the historical role assigned to them based on a dominant and authoritarian position that has had a negative effect on their affective life and work relationships. This has propelled changes on social life and policies so men could also share domestic and care responsibilities; develop collaborative (non-competitive) relationships in different spaces of the existence, including the academic work; solve conflicts without violence; and join feminist, ecological, and ethnic efforts towards respect for nature and their human rights (Geldres et al. 2013).

Feminism has also contributed to put forward conceptual tools towards the recognition of the human rights of other gender identities in the public sphere, such as the LGBTQ+ communities, stigmatized for not being part of the binary division of the world in only two genders and having a non-heteronomous sexual orientation. Looking for the inclusion of the LGBTQ+ rights in the feminist agenda means transforming numerable prejudices, among women themselves, who do not see transgender women as being real women because they were biologically born a male; however, these women are the most prone to discrimination and hateful rhetoric:

In today's current political climate, both nationally and internationally, it is painfully obvious that the LGBTQ+ community and women are not treated as equals towards their straight, male counterparts. Both women and the LGBTQ+ community have an obligation to fight for their rights. Their right to not be discriminated against based on their gender and/or their sexual orientation; their right to not be harassed in their everyday lives; and their right to live a peaceful, happy lifestyle in whatever way they choose, without prying eyes judging their every breath and move. (Grain 2017: 1)

By the late decades of the twentieth century, the magnitude of the ecological crisis confronted the ideological and epistemological androcentric and anthropocentric frameworks that have oriented

modern society, which disregard nature as the essential milieu for all life. This *anthropocentric* thinking conceives growth, social progress, and human creativity beginning and ending with the individual (Shea 1998). A global neoliberal market economy imposed individual consumerism that demands more and more natural resources and land, which in turns expels local people from their territories and generate unwelcome migrations, particularly from the Southern hemisphere. As Vandana Shiva (2001) has stated: Globalization is causing new slavery, new holocausts, new apartheid. It is a war against nature, women, children, and the poor. *Ecofeminism* has thus become a powerful current of thought and a social movement that links environmentalism and feminism, revealing that the subordination of women to men and the exercise of patriarchal power are also an expression of the submission of life to the predatory demands of accumulation and exploitation of nature (Herrero 2013). *Decolonial feminisms* or *feminisms from the South* have also emerged across the planet denouncing the strong relation between capitalism and colonialism, which has increased women's oppressive experiences around the globe and their aspirations for living with dignity (Gargallo 2012; Herrero 2012; Wylie 2001). These feminisms will be more widely described in the next section.

We agree with Castells (1998) that this *polyphony and multiplicity of feminist identities* should not be considered as a source of weakness but of strength, considering the emergence of global networks and diverse dynamics of social conflicts and power struggles to question patriarchy in its very diverse manifestations: homophobia, undervaluation of girls and women, exploitation of nature, and the apology for authoritarianism and militarism. All these discussions and diversity of perspectives have fed the feminist movement, which finally achieved that the United Nations General Assembly declared the first World Conference on Women by 1975 and the Decade for Women's rights from 1976 to 1985. On 18 December 1979, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) was adopted by the United

Nations. The Fourth World Conference on Women, held in Beijing in September 1995, despite the great diversity and different global provenance of participants, shared a single goal: gender equity and the empowerment of all women, everywhere.

More recently, expressions of diverse polyphonic voices from the South were articulated in the *III World Conference against Racism* organized in South Africa in 2001; the *United Nations Declaration of Human Rights of Indigenous Peoples*, adopted in 2007; and the *United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas*, approved in 2018. All contains special articles on gender equity rights as a result of long consultations within and among very diverse social movements and organizations.

Feminisms from the South: Anti-racist and Decolonial Resistances³

Afro-descendant women face double discrimination because of our race and gender, and additional discrimination because of poverty. (Charo Mina-Rojas 2018: 1)⁴

In the community assemblies, we say that we agree to declare our territories free of transnational corporations. In the same way, we also want these same territories to declare themselves free of violence against women. (Aura Lolita Chávez Ixcaqui 2014: 19)⁵

The structure of modern society and its worldview became strongly influenced by the European colonial project since the sixteenth century: a global hegemonic structure of power put in place by the conquest of territories overseas, articulating race and labor, land and people on the basis of material

³Because of our personal experience and knowledge, we limit ourselves here to some approaches from Latin America. The rich contributions to feminisms from the South, from Islamic and Secular Arabic women's movements, as well as from other non-European cultures from Africa, Asia, or the Pacific, deserve a further dialogue with authors from these contexts.

⁴Our own translation to English from Spanish.

⁵Our own translation to English from Spanish.

gains (Escobar 2007; Walsh 2012). As Escobar (1998) explained, concepts like “poverty,” “Third World,” or “underdevelopment” were coined to globally promote the First World’s capitalist model of development, imposing extractive and monocultivation economies, with extended costly credits to Southern countries. This has ended up in the displacement and the loss of the territories of Indigenous, Mestizo Peasant, and Afro-descendant rural communities, with devastating impact on women and children.

Coloniality, the dark face of modernity, has denied and made invisible epistemic rationalities and cosmovisions different from those of European White men origin (coloniality of knowledge), dehumanizing women and men from non-European populations based on the reason-racial rationality of “civilized individuals” (coloniality of being) (Walsh 2008). Many ancient worldviews and epistemologies understood the feminine and masculine as complementary; the masculine and feminine duality-unit was an integral part of the creation of the cosmos, of its (re) generation, and maintenance (Marcos 2018). Diverse cosmogonies recognize not only gods but goddesses such as *Pacha Mama* or *Mother Earth*, source of life and wisdom for Indigenous peoples (Green 2011), or *Lemanjá* or *Yemanyá*, the mother of all Orishas (divinities or gods), the womb from which all the world’s oceans were born for peoples of the African diaspora (Allegue 2020; Simpson-Wilkey et al. 2020). However, the European conquest and colonization of territories overseas was expanded under the patriarchy’s umbrella of the Christian monotheistic culture, which has been detrimental to the subjectivities of the diverse Indigenous and African origin people across all Latin America.

Undermining the feminine in non-European cosmogonies increased patriarchal traditions under colonialist domination up to today. Christian colonizers declared these cosmogonies superstitious and inferior; they were violently banned, some of them giving rise to what Paredes (2014) call a patriarchal junction, the crossing between ancestral patriarchal practices and Western male-centered culture. Today, women’s from Indigenous, Afro-descendant, and Mestizo

Peasant origin have called the attention to the complexity of being doubly oppressed: by the dominant colonial culture and by their own traditions. As the Maya leader woman Lorena Cabnal expressed: “*I was told that most of us Indigenous peoples lived in harmony; then I begin looking at my own world and recognized forms of machismo, what I later called the original ancestral patriarchy*” (in Giménez and Bravo 2017: 1).

Feminisms from the South (decolonial, popular, community or Abya Yala⁶ feminisms) (Espinosa et al. 2013; Gargallo 2012) emerge as a political and ethical project, a new epistemological and political pathway, developed from, to, and through women from the South. They are diverse projects that propose the deconstruction of the current colonial/modern project, where race has been inseparably linked to a hierarchical division of the world, subjugating racialized women’s bodies, labor, thoughts, knowledge, and rights. They are made up of diverse efforts to subvert historical determinisms, discover new roads for humanity, and tell other stories. They bring to light racialized women’s voices, wisdom, and know-how that for years have been made invisible and silenced by hegemonic male colonialist discourses.

As Lugones (2008) explains, an *intersectionality* perspective of gender, race, and class is needed to interpret the complex realities that Latin American women from Indigenous, Afro-descendant, and Peasant Mestizo origin endure. This means recovering their own selves, knowledges, mysticism, and stories from which they were dispossessed, as well as re-encountering and re-signifying their own bodies. Bodies that cannot be understood without the access to the territory, the water, and land that give them life. As expressed by the Maya feminist Lorena Cabnal:

I assume the recovery of my expropriated body for the generation of life, joy, vitality, pleasures, and the construction of a liberating knowledge for my own decision making. However, this personal power

⁶Abya Yala is the name given to Latin America by the Gunadule people, who inhabit the region between Panama and Colombia since precolonial times. It means land in full maturity or land of vital blood.

needs to go along with the defense of my land territory, because I cannot conceive my own woman's body without a space on earth that dignifies my existence and promotes my life in fullness. (Cabnal & ACSUR- Las Segovias 2010a, p. 23)⁷

Feminisms from the South unfold from the voices of marginalized women in Latin America, who take a different stand-up from modern urban "Western" middle/upper class feminisms, which have had difficulties in acknowledging the complex struggle that diverse Afro-descendent, Indigenous, or Mestizo Peasant women undergo: for one side, the anti-imperial and anti-colonial resistance they entail collectively against territorial displacement, labor exploitation, and extractive economies. For the other side, creating organizational and creative strategies to change patriarchal beliefs and practices at the interior of their own families and communities to transform authoritarian and violent patterns and behaviors of leaders, fathers, partners, and other male members of their communities, who are oppressed as well (Gargallo 2012; Paredes 2014).

Transforming Women's Oppressive Realities: Some Experiences from the Ground

The following are a few examples from the many diverse initiatives that describe how feminisms from the South in Latin America are growing by creating alternative historical projects to build solidarity networks and actions to radically transforming existing structures, institutions, and power relations, towards what Catherine Walsh calls, the depatriarchalization, decolonization, and demercantilization of life, nature, and territories (Walsh 2013).

The Rural Women Workers Movement emerged in 2004, as a political faction at the interior of the Landless Workers' Movement (*Movimento dos Trabalhadores Sem Terra*, MST) in Brazil, to bring to light the silences but also the voices of rural women. Since the creation

of the MST in 1986, the place of peasant and working women within the movement was not noticeable. They had to rethink themselves and consolidate their participation, both for themselves and for their peers, to become visible as *political subjects*. As the leader Etelvina Masioli said, "*It cannot be accepted that the same hand that plants agroecology and propose an equal society, it is the same hand that hits, mistreats, assaults, and represses a woman*" (in Longo 2015: 166). The MST, through women's leadership, has thus become a **peasant feminism**, a decolonial project against patriarchy and the commodification of the earth and life. It has been inspiring the construction of community and solidarity feminisms around the world.

A similar purpose on building a peasant feminism can be found in the experience of the Association of Organized Women of Yolombó (AMOY) in Colombia. As Cárdenas (2013) describes, AMOY was born in 1995 in the midst of the Colombian armed conflict, oriented to protect rural women's human rights and territories; promote their autonomy, subsistence, and sustainability; support their visibility in political and communitarian spheres; and strength their resistance practices exercised in defense of their lives and their territories. Women meet in group and start together the recovery and reconstruction of their identities as peasant women. The collective work was a strategy for the construction of their autonomy in different aspects: productive, individual, family, and community, all interrelated and understood as a complex fabric of vital relationships.

Communitarian Indigenous feminisms can be appreciated in the initiatives of the *Aymara Women Creating Community* in Bolivia as well as the Xinka women of the *Association of Indigenous Women of Santa María* in the mountain of Xalapán, Guatemala. They shared the common effort of working for the recognition of their own oppressions and rebellions as Indigenous women but also in the defense of their ancestral territories, which are inhabited by women themselves (Cabnal 2010a, b; Guzmán 2015). These communitarian Indigenous feminisms aim to create, recreate, and mobilize concepts, reflections, and

⁷ Our own translation to English from Spanish.

proposals emphasizing solidarity. They are diverse and plural experiences committed to transform Indigenous women's oppressive history and reality because of ancestral patriarchal beliefs crossed with Western colonial patriarchy and racism.

The African diaspora feminisms emphasize the particularities of black women's own situated struggles, considering the devastating historical consequences of slavery, reproduced up to today by racism, poverty, and violence. From the intersectionality perspective, the dimensions of race, gender, and class are inseparable identity components in their different experiences; these dimensions highlight the matrix of domination that affects black women's lives in a differentiated way (Jabardo 2012). For Betty Lozano Lerma (2015), feminism cannot be one because women are diverse. She has contributed to the consolidation of a black, popular, and decolonial feminist project, from which to make visible the discrimination of black women and the claim for their rights. Lozano Lerma (2010) highlights how various black women construct subversive proposals of the social order that oppresses them in different ways, due to their racialized condition and their poverty. Cogollo, Flórez and Nández (2004) illustrate, for example, the Afro-Caribbean women's struggle to strengthen their rights and participation in private and public spaces, while questioning the unequal relations with their male partners that cause them suffering and unhappiness. Nonetheless, they invite not to ignore the complex psychological vulnerability and economic oppression that Afro men from their own communities endure as well. Francia Márquez (2018), as a renown environmental activist, human rights defender, and leader of the Afro and artisanal mining communities from the Colombian Pacific region, emphasizes how a feminist position must be interwoven with the defense and care of local communities' lands and the environment. This means making visible and strengthening the fundamental role of women in the care of life in all its manifestations. For Márquez (2019), patriarchy together with racism and capitalism have been the forms of oppression that are destroying the planet, putting it at high

risk and threatening the lives of women and girls in multiple ways.

The above are just a few examples of the large diversity of women's voices from Latin America, which have been contributing to enhance the feminisms from the South perspective as a plural and shared creation in solidarity, looking forward to build other possibilities of being and living differently from the modern individualistic and consumerist society. They are being configured as a political, epistemic, ontological, pedagogical, and intercultural ethical project, opening new avenues towards other possible knowledges, views, languages, and ways of thinking; other possibilities of living with the others and nature.

Some Conclusions – The Feminist and Humanistic Quest: Transforming Exploitive Relations Between People and with Nature

Despite so many historical, geographical, and political differences, the feminist movement has been creating common routes, although shaped from different women's paths. As Freire expressed: "I live history as a time of possibility and not as following a determined existence" (2012: 98–99). Possibility understood as openness to transform oppressed situations, to change a reality conceived as immutable, to look at dreams, and create together a utopia. Since its naissance, feminist thought has strongly worked to demystify and denaturalize the ways of being, doing, and feeling, which have determined the way women are understood and understand themselves through history. In this way, feminism, in its different expressions, has questioned the role that men and women have occupied in society, supported by an alleged biological determinism that undervalues women. It has been opening paths towards the construction of other possibilities of being, other ways in which women can be recognized and recognize themselves.

Feminisms from the South take shape from the voice of marginalized and racialized women in Latin American, asking questions to the academic world that otherwise would not have been asked.

They are a quest to advance women's human rights as part of the struggle against racism, ethnocide, and the domination and subjugation of entire populations, who have been considered primitive and inferior by different economic powers. It also means the defense of the territories, water sources, and ecosystems in which women recreate life, recognizing nature rights as well. A plural and solidarity feminism cannot be built without considering the human rights of impoverished women from the South to health, education, and political participation. This means to all of us to support the defense of their territories and ecosystems from predatory economies, the territories in which they build life with their communities.

Cross-References

► American Pragmatism

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Fiction

Marina Assis Pinheiro¹ and Livia Mathias Simão²

¹Universidade Federal de Pernambuco-UFPE, Recife, PE, Brazil

²Universidade de São Paulo-USP, São Paulo, SP, Brazil

Keywords

Fiction · Aesthetic experience · Myths · Fantasms · Eduardo Coutinho · Creativity

Definition

This entry proposes the understanding of fiction as a pervasive dimension of psychic reality, that is, a reality constructed by a unique subjectivity that

creatively transforms the I-other-world relationships through an affective-cognitive meaning construction gestated in the dialogical intimacy of the relationship with cultural multivoiced arena. Based on literary experiences, the proposed discussion highlights the ethical and aesthetic dimensions of fiction in culture based on Gadamer's hermeneutics and Richard Rorty's considerations on imagination and literature. In the universe of fiction theorization and psychological-subjective experience, Ernest Boesch's contributions about the transformative dynamics between individual and culture are emphasized through the affective dimension that acts on the relationship between collective myths and individual fantasms. Finally, as an interpretative exercise of the proposed construction of fiction, the speech of Alessandra, a character from the documentary *Edifício Master* (directed by Eduardo Coutinho), is presented as a way to examine the fiction inherent to the construction of metaphors and meanings for the alterity of life.

There are many emblematic expressions in contemporary Western cultures in which truth has become increasingly based on passionate collective consensus, rather than its factual verification or argumentative dynamics. Post-truths, fake news, and denialism are vivid examples of version reconstructions of actual social facts. In the actual Western democratic crises – intensified by media customization and the affective power of virtual societies with their algorithms – bubbles have become a landscape for meaning constructions predominantly based on validation by peers and not by the tension toward their possible opposites that could trigger transformative processes in culture (Pinheiro 2019; Tateo 2018; Lakoff and Guill 2018). In the context of mass behavior, as shown by the modern and contemporary history of the Western world, fictional modes of the reconstruction of reality can take on destructive guises when their dynamics serve the reduction of human diversity.

In this cultural landscape, a reinvestment in possible meanings and understandings about the fictional dimension of individual and collective lives is reassigned as a major task for the humanities, given the special interpretative value of fiction in the processes that subjectivize reality, as

well as its ethical impasses in the universe of human relations. It becomes obvious, however, that in the field of opposite meanings for fiction, there is no place for a unique sense of truth. Far from it, the fiction dimension – ever since its emergence in literature and up until its actual insertion into the relationship between individual and culture – expands and diversifies the concepts of reality, that is, it amplifies the treatment of human “truths.” This is because the latter are subjected to the multiplicity of meaning potential and nebulosity in human truths that has been culturally forming them, as well as the ambivalences of their actors toward such possible senses of truth (Pinheiro *in press*). In the words of Argentinian writer and essayist, Juan José Saer, author of *O enteado* (2002):

By moving towards the unverifiable, fiction infinitely multiplies treatment possibilities. It does not deny an alleged objective reality; on the contrary, it submerges in its own turbulence, showing disdain for the naive attitude of pretending to know in advance which way reality will fall. It is not hesitation before this or that truth ethic, but the pursuit of a somewhat less rudimentary ethic. (Saer 2012, p. 3)¹

Thus, the author describes fiction not as an exercise in reality transfiguration but, above all, as a dimension that articulates with the field of the possible, the invisible, with that which is in the larvae phase or, still, with the potentiality for multiplicity implied in the emergence of whatever erupts as truth. Fiction would thus contemplate not the false, but the multiplicity implied in the illusions of the one transparent and all-encompassing truth.

Therefore, this entry focuses on fiction as a register inherent to psychic reality, that is, a reality constructed by a unique subjectivity (Bakhtin

1999) that creatively transforms the I-other-world relationships (Simão 2010; Boesch 1991), through an affective meaning construction elaborated through the dialogical intimacy of the relationship with cultural multivoiced arena (Pinheiro *in press*; Simão *in press*). In this perspective, the possible is not seen only as a result of life’s flux eventicity in the irreversible time. The possible is encompassed by an active construction raised from a potentiality inherent to the creative force of fiction, this inherent register of psyche.

To deal with this proposition, this entry will be subdivided into three parts. At first, the matter of fiction will be viewed under Richard Rorty’s perspective (1999); for the specific purposes of this entry, we will stick to his specific contribution to the creative power of literature in the relationship between culture and the individual. In this section, some of Gadamer’s (1989) propositions about aesthetic experiences and experiences in general will be presented. Taking this path, we seek to shed light on the extraordinary potentiality that life’s normativity can harbor. After this aesthetic and philosophical discussion, the focus will shift to the sphere of psychological theorizing using the reflections of Ernest Boesch (1984, 1991, 1993) about the relations between myths and fantasms in the affective regulation of the potential field of human action. As proposed in the present encyclopedia’s theme, the proposed approach of fiction is an approach of human construction of possible, as a landmark not only of the non-determinacy principle of subjectivity but of its creative-transformative way of constructing realities. Finally, in order to encompass the subjective experience in a living, empirical datum, we will call into discussion the speech of Alessandra, a character interviewed by the Brazilian documentary filmmaker Eduardo Coutinho, in the movie *Edifício Master* (2002). The film presents the narratives of the residents of this Copacabana building, located in a neighborhood of the state of Rio de Janeiro, Brazil, about their dreams, challenges, and daily lives. It is by examining the art of Coutinho’s encounters that we will shed light, in this chapter, on possible meanings for fiction and their ways to remain current in the dynamics of human action.

¹Original text: Ao ir em direção ao não verificável, a ficção multiplica ao infinito as possibilidades de tratamento. Não nega uma suposta realidade objetiva, ao contrário, submerge-se em sua turbulência, desdenhando a atitude ingênua que consiste em pretender saber de antemão como essa realidade se conforma. Não é uma claudicação ante tal ou qual ética da verdade, mas sim a busca de uma ética um pouco menos rudimentar (2012, p. 3).

Aesthetic-Philosophical Assumptions About Fiction: Contributions by Rorty and Gadamer

The intention in bringing Rorty's neopragmatist perspective and Gadamer's hermeneutics into dialogue is to stimulate reflection on the ethical and aesthetic dimensions that are implicated in the question of fiction in human experience. As mentioned before, the possible in human experience is thought as a construction related to the pervasive fictionalization of reality inherent to human psychological open dynamics, and, in this sense, it can lead to different ways transforming I-other-world relationships in individual and collective levels.

In this particular sense of bringing together Rorty and Gadamer, what is proposed here is to identify points of possible dialogue between both philosophies, points that may signify a *frontier/border* dimension to advance in this reflexive exercise between the conceptual grammars of these two thinkers who, despite being anti-essentialist, produced markedly distinct orientations².

As presented earlier, if Saer, author and essayist (2012), proposes fiction as an amplification of reality, Rorty (2010), through the allegory of literature, makes an important contribution about the role of the latter and, consequently, of imaginative fiction in the ethical horizon of human relations.

Anti-essentialism is a fundamental milestone of Rorty's philosophical landscape. For the author of *Contingency, Irony, and Solidarity* (1999), the truth is not before man to be contemplated, since it does not exist in advance of linguistic activity. In this perspective, what we believe to be true is understood as a consensus effect of a specific community, based on language games, and therefore always contingent and historically dated. The history of intellectual evolution, the production of

knowledge, would not be considered as a growing understanding of "real facts," but rather as the history of metaphors and their process of becoming better and more useful in answering questions inherent to social practices. The ideal of making a transparent description or even a realistic portrait of the inner truth/essence of anything is here thought of as a fiction that allows the realization of specific and contingent human purposes. A result of such reasoning, the knowledge production method would be thought of in terms of its instrumental value in producing a human community amplified in its sensitivity concerning the needs and the dignity of others, an expansion of the "concept of us" (ethical value thought of as the motor of scientific production). According to Rorty, the work of the researcher consists of:

This sort of philosophy does not work piece by piece, analyzing concept after concept, or testing thesis after thesis. Rather, it works holistically and pragmatically. It says things like "try thinking of it this way" – or more specifically, "try to ignore the apparently futile traditional questions by substituting the following new and possibly interesting questions." (Rorty 1993, p.9)

The aforementioned highlights the creative power of language on which Rorty focuses. For this thinker, vocabulary (Wittgenstein 2009) would be an instrument capable of doing something that could not be thought of "prior to the development of a particular set of descriptions, those which he himself helps to provide" (1993, p. 25). In this context, the philosopher discusses the relevance of the ironist tradition that recognizes the uncertainty of its own vocabulary, since it was produced by other inherited vocabularies. The ironist attitude also does not believe that its own vocabulary is the key to answering all questions.

That's the path in which imagination is fundamental to the neopragmatical Rortian perspective, as it would be key to amplifying our ability to perceive the suffering of others and to build an effective register for solidarity, for the recognition of the dignity of the suffering of others as well as ours. For the author, what makes us similar to each other as humans is the propensity to pain and humiliation. This unique propensity of the

² Although there are many aspects of discussion about the convergences and divergences between the perspectives of Rorty and Gadamer, let us not dwell here on approaching them all. For an understanding of the background and implications of this discussion, see, for example, Bowie (2004).

human condition is the only one Rorty recognizes as universal, thus marking the anchor of the ethical, nonrelativistic attentions of liberal and democratic communities.

Literature, according to Rorty, would be able to amplify, via the reader's imagination, people's sensitivity to particular details regarding the pain and humiliation of the other, of the non-I, including the non-I existent in me, in the sense of my own pain and humiliation that I don't recognize as part of me. Under this light, solidarity would not be fully attained by abstract theories, rationalizations, or concepts. Far from it, literary fiction would be the main path on the road to expand the possibilities of our empathic identification, understood as a form of participatory emotion. Novels, ethnography, and documentaries would be effective means for transforming life forms. As an important psychological aspect, Rorty states:

The only thing which can let a human being combine altruism and joy, the only thing that can make either heroic action and splendid speech possible, is some very specific chain of associations with some very idiosyncratic memories. (1993, p.153)

In this sense, Rorty recognized that, in the aesthetic enjoyment of literature, the idiosyncrasy proper to the reader's private sphere of life would be triggered in the act of experiencing the otherness of the art, proper to the public domain. The relationship between such experience and the strong poet, who reconstructs his own autonomy in light of a new vocabulary, would instigate new forms of solidarity by lending his uniqueness as an empathic attitude about the other's pain. The strong poet would make the blind spot given to them by chance a field of attunement to the other's pain. In performing his new vocabulary in order to avoid cruelty, the strong poet would enhance his field of action and amplify the concept of "us."

Rorty does not see literature as the object of a specifically aesthetic reflection but, above all, an ethical one. However, the philosopher leaves important clues for the reflection on the meaning of his aesthetic experience and the fictional role of the reader, as the one who imaginatively recreates the work of art. It is in this sense that Gadamer's hermeneutics can be summoned, since he is a

contemporary author who sheds light on the vicissitudes of aesthetic experience.

In *The Ontology of the Work of Art and its Hermeneutic Significance*, Gadamer (1989) proposes that the aesthetic experience would be characterized by the logic of simultaneity. The discontinuity experienced in rapture – which undoes the differentiation borders between subject and object – is concomitant with the holistic, continuous whole of a subject who amplifies the register of his truth through the immersion in the lived experience. In his words: "Therefore, the viewer's ecstatic self-forgetfulness corresponds to his continuity with himself. It is precisely that in which he loses himself as a spectator that demands from him a continuity of meaning" (p. 186). Thus, the philosopher points out that, despite the traditional primacy of the rational concept of aesthetic representation in the Kantian tradition, it is imagination that expands human capacities, enhancing the free play of forces in the process of knowledge construction. Aesthetic experience would be a form of knowledge production neither inferior nor superior to the universe of abstractions but, above all, implied and instigative of the emergence of the novelty and the overdetermination of the possible.

The temporary disappearance of the border between reader and text, between audience and work of art, allows for the most transformative exception, at the same time tangled into in the usual ordinariness of everyday life, a silent opening to that which is not us and inside of us is makes itself said (Frayze-Pereira 2005). It would not be a transfiguration of reality, but of its own truth: "he who dreams, awakens." Inspired by Simmel, Gadamer (*ibid.*) characterizes the quality of the experience, as an aesthetic structure, as the grammar of adventure. It interrupts the usual movement of things, moving toward the uncertain, arresting commitments and conditions. This would be the path toward a wealthier return of the subject to the meaning of his/her life.

That which does not exist but is, above all, the world we live in, our own world. The configuration of transformation is not simply a transference to another world. It is certainly another world, closed in itself, in which the game is played (*ibid.*, p.167).

In the abovementioned quote, there is a provocation about that which does not exist and, paradoxically, it would be our own world. Using the metaphor of the game to understand the aesthetic experience, Gadamer draws attention to the fact that every game owns the player as if it was his/her only master. In the playful event, the rules and dispositions that constitute the game configure a way of losing oneself, of excluding any kind of subjective firmness. If gaming suspends the ends that guide the ordinariness of life through the sacred earnestness of playing the game, the game itself would never be a passive object, just as art is transformative of those who experience it.

It is never a magical, strange world, a rapture, a dream to which the actor, sculptor, or spectator is drawn, but always their own world, to which they most authentically refer when recognizing themselves more deeply in it (p.192).

The philosopher points out that if, on the one hand, there is this eclipse between subject and object of experience, on the other hand, it does not signify the creation of a separate, unreal world filled with sweet sounds. The idea here focuses on the construction of a surplus of vision (Bakhtin 1990) caused by the amplification of the polysemy and affectivity of the lived experience. If, on the one hand, the ordinariness of life is a sociocultural mesh that gives cadence, rhythm, a set of regularities proper to the collective circuit, on the other the intimacy of the fiction existent in aesthetic experience would be an inherent dimension to the impact of the ambiguity of the signs of experience. This process harbors a sort of distancing from the immediacy of performance toward the otherness of the voices that constitute the subject and participate in the expanded construction of meanings of the lived life, or, rather, the blind spot presented by chance (Rorty 1999).

The Theory of Symbolic Action and the Fiction of Each One of Us

Even when the intention of veracity is sincere and the narrated deeds are rigorously accurate - which is not always the case - the obstacle of the authenticity of the sources, the interpretative criteria, and the

turbulence of meaning characteristic to every verbal construction still remain. (Saer 2012)

According to Boesch's (1984) theory of symbolic action, culture is a field of action in which the world, objects, and contingencies are signified in a markedly personal way through an ambiguous and heterogeneous sign system. Semiotic channels of action – as is the case of conventionality and a number of diverse significant otherness aspects in the directing of messages – are a subjective extension of the individual, which participate in the transformative-creative dialectic in light of the disquieting and alteritarian objectivity of the nonself (Simão 2010). For instance, when children from middle school are asked to construct comic strips about a kid who studies at a school where nothing was forbidden, the unfamiliar situation of the task (the resistant object: a school where everything is possible) is recreated by using exactly the normativity of children's school quotidian. As an extension of author's self, an internalized conventionality otherness is subverted, in a microscale, among the course of action (Pinheiro and Simão [in preparation](#)).

In this sense, Boesch's theory – as interpreted by cultural semiotic constructivism (Simão 2010) – is discussed in the present entry once the affective basis of action, which regulates the construction of objectives, is systematized as the genesis of human potentiality in the face of the otherness of the world. In other words, the potentiality which creates action would be based on the uniqueness of each subject's biographical history and its modes of meaning making regarding the resistance of the objects of experience. In this perspective, we could say that subjective reality, the fiction inherent to the subjective condition, is a form of affectively oriented interpretation of the world supported by collective myths and individual fantasms.

According to Boesch (1991), myths “thematize obstacles that human beings face in their life, and ways of dealing with them” (p. 112). They are told to us by others. Myths are both constantly recreated and maintained by social actors for some purposes, at some periods, in some places, giving to the social actors an opportunity to fulfill prescribed social roles, allowing them feelings of self-accomplishment, self-enhancement, and self-realization, as

well as preventing them from other actions and feelings. To this extent, myths are alive and usually have a long life (Simão 2007). As in the comic strip task mentioned previously in this entry, when the participants were asked why in a school where nothing was forbidden they still integrated tests for the main character, most of the participants used to say that they couldn't get a good job, become a medical doctor, without the tests. Without school grades, one of the participants said, they would become "garbage collector," indicating a certain type of meritocratic myth of failure and success in their fantasmic-creative construction.

Literature has an important role in reconstructing such myths. Moreover, they are not structures above individuals nor below them, but they are born and develop in an intimate bidirectional process: myths are channeled by people just as much as they channel personal symbolic actions (Boesch 1991; Simão 2007). What Boesch (1991) calls "assimilation of a myth into fantasms" is a constructive process of assimilating the meanings of a myth into one's personal developmental structure. However, this assimilation depends on the possibility of articulation of mythical stories and themes (mythemes) to one's previous experiential bases, which form our values, aspirations, beliefs, fears, dreams, etc. (Boesch 1991). In other words, the assimilation of a myth into fantasm depends on the possibilities of integrating mythical contents into the previous affective-cognitive basis the person has already been constructing, which is also in constant transformation (Simão 2010). In this perspective, this would be where fiction and the possible rejoins in human experience. By being so assimilated in fantasms, myths become content of subjective experiences, unconsciously taking part of personal aspirations, values, and identity, this later understood as a result of a constant structuring process (Boesch 1991).

The fantasm alludes to the refractory uniqueness of reality, given in the process of signification of the individual constantly trying to grasp the future's uncertainty. If myths are a knowledge constructions about the world that give it order and meaning, these discursive structures are not assimilated without the abbreviations and

emphases given by the subject's historical and affective uniqueness. If, on the one hand, myths contain rules and justifications concerning I-other-world relationships, on the other, which myths will be selectively activated in the subject's experience is a process governed by the fantasm. Fantasms would also be a form of imagination that generates action patterns. Thus, fantasms form a kind of concrete, structured, momentary, and unique subjective web that is activated in the process of meaning construction in the face of the indeterminacy of the future. In this sense, fantasms could be thought as a fiction brought to reality from different possible imaginative paths.

In this sense, it is worth noting that both fantasms and myths are not in the position of the antithesis of truth, but are, above all, a grammar for other forms of meaning construction, given by a marker distanced from the traditional notion of rationality. In the classic article *The Sound of Violin* (Boesch 1993), the beauty of sound is understood as a metaphor for the bidirectional relationship between culture and the individual. There is a dynamic between subject and object that is never merely objective-instrumental, but also and especially subjective-functional. In the subject's tensions over activity, mastery would be a creative becoming where the nonself, represented by the alteritarian resistance of the object of experience, becomes an extension of the self. The active antagonism of the object, in this case the violin, can constitute a barrier that produces feelings of limited action potentials. To master it, intensive practices, eventual dropouts, or even the achievement of some utopia, while experiencing the suppression of the difference between self and nonself, all constitute a markedly ambivalent and uncertain course. The affective regulation of action participates in ways of overcoming ambivalence, also producing superordinate goals that are distant in time, but which command actions and allow their sustenance, as in the arduous task of becoming a violinist.

In short, affects in addition to their actual functionality are polyvalent, i.e., possess or point to various meanings not immediately relevant to the ongoing action. In this sense they are symbolic as well as "real." Yet, basically, the same is true to

object cognitions – each representation and concept has their extension connecting them to various other mental contents. Symbolism, it would appear then, is much a quality of affective as of cognitive schemas (Boesch 1984, p.179).

In the *Affective Schemata* paper, from which the above quotation was taken, Boesch emphasizes the affective polyvalence implied in the network of symbolically articulated meanings not only as quality of the object but as subjective and functional regulation acting in the course of action. In this sense, the symbolic web of meanings marks the cultural inheritance of the signs open system. The symbolic order is thus semiotically articulated from an affective-fantasmic point of view. In this sense, Boesch shows us, on the psychological horizon of potential fields of action that ambivalent affects, which act on fantasm patterns, constitute the perception of oneself as an actor, “this very little studied perception” (1984, p. 178). It would then be through the ways of dealing with the ambivalences implied in the object’s resistances that the subject’s affective and singular sense transforms the action’s objective sense. In this path, it would be from fantasmic-idiosyncratic fiction that possible realities would come to exist, as well as the alterity of reality that transforms the affective-semiotic bases of the fantasies.

As presented earlier in this entry, fiction, in terms of its psychological dimension, would imply recognition of the register inherent to psychic reality, that is, a reality constructed by the active and singular oneness that creatively transforms self-other-world relations (Simão 2010; Boesch 1991), through an affective semiosis gestated in the dialogical and fantasmic intimacy of the relationship with cultural otherness (Pinheiro *in press*).

Thus, three fundamental perspectives stand out for an understanding of the hermeneutic meaning of fiction proposed in the present text:

1. Fiction, proper to subjective experience, is not opposed to reality, but can be characterized by the complexification that amplifies objective sense.
2. In terms of the psyche, fiction alludes to the affective-semiotic register that acts in the

interpretation of the otherness of the world. Fantasms, in the Boeschian sense, can be read as historical-singular refractions, or even particular assimilations of myths that operate superordinate goals implied in the course of action.

3. As a creative dimension of the experience, fiction can be thought of in terms of the aesthetic dynamics that arrest/suspend the separation between subject and object, as well as of having its own duration temporality, implied in intensification of the ambiguity of the signs of experiences, thus transforming the mesh of everyday life.

Alessandra³: The Fiction of Her Own Self

This section is about a brief interpretative exercise on the fiction inherent to the psyche in the relations between individual and culture. As aforementioned, Alessandra, a character from the documentary *Edifício Master* (Coutinho et al. 2005), was chosen. Her speech and narrative were chosen not only for their uniqueness and enunciative frankness but also for the features that made Eduardo Coutinho’s cinema an art capsule of the exceptional vicissitudes of the meeting. His cinematic minimalism (Moreira Salles et al. 2002)⁴ rejected any visual appeal beyond the interviewee’s narrative, displaying it virtually unedited. For the director, the attitude of confinement and testimony interested in the other’s way of life was fundamental, often triggering the disruptive emergence of affection in the field of self-narrative. This makes his documentaries enrapturing experiences because of the extraordinary enunciation constructions that the common/average subject can harbor.

³Available in https://www.youtube.com/watch?v=VazEqtcIM_U (last access: November 4th, 2019).

⁴Expression used by João Moreira Salles to characterize Eduardo Coutinho’s style, in not resorting to images and aesthetic-cinematic resources beyond the interviewee’s first-person narrative. Lecture available at <https://www.youtube.com/watch?v=LCYKFscdLB0&t=986s> (last accessed 11/11/2019).

It should be noted here that the term “character” may sound strange when we talk about the documentary genre and the living lives that make up the film. Although it is not the purpose of this text to construct a reflection as a film critic, it can be said that the character would be something that does not exist prior to the meeting between the interviewee, the interviewer, and the camera. As Bakhtin addressed in *Aesthetics of Verbal Construction* (2006), the interdependencies and differentiations between author-person and author-creator, author and character, character and hero, the character, such as Alessandra, in Coutinho’s documentary, should be understood as the product of the encounter’s alterity and its potential surplus of vision that breaks expectations and surprises the interviewer-interviewed-spectator triad. Between the performativity of the statements elaborated in the first person and the game of responsivities produced by the copresence of Coutinho and his camera, a third dimension emerges from the infra-linguistic, affective, and communicative register that arises in the filmic production.

Alessandra begins her interview by stating that she was not allowed to properly live out her childhood. She would not have been a “normal child” because her space of freedom was surrounded by her father’s vigilant posture, only allowing her the homeschool journey. He wanted to protect her “from everyone.” So she tells of how she got pregnant at the age of 14. The father of her child was a man she “thought she was in love with.” She found out that something strange was happening to her body, from which she concluded the pregnancy. In Alessandra’s report, a vibrant and happy countenance emerges when she speaks about the birth of the daughter, Alexia Carolina. In the film sequence, the character speaks about her first time as a prostitute and the satisfaction of earning 1 month’s worth of a regular job salary on one single time with a client. She joyfully says that she spent all of the money on fast food at a mall with her daughter. She says that on that day she felt like “a child who got the toy she desired the most.”

At this point of the interview, a sign emerges that permeated different moments of her presence as a character in Coutinho’s documentary, namely,

courage. While on the one hand she says that she would no longer have the “courage to spend one hundred and fifty reais on Mc Donalds,” on the other hand she reports that she can only “bring up the courage” to work after drinking. Alessandra says that even when the customer is an interesting and intelligent man, she feels disgust at the moment of payment. Alessandra narrates the recurring humiliations that make, “contrary to what others may think,” prostitution money not easy at all. We hear the following answer to Coutinho’s question about her *joie de vivre*:

I do . . . I do like [life] but I expect to die at any moment. I already told my mother: when I die do not cry! Because I’ll be better off than everyone here, right? Because there are a lot of bad people here in this world. When I die I’ll be happy . . . I don’t want to die, no, I love my life, but I know I’ll stop suffering, I won’t have to work so hard, to wake up at seven in the morning. . . that would be great!

In this speech, death emerges as a possibility potentially imminent to life, in a form of consciousness that does not place it in a soothing future. Taking another route, Alessandra neutralizes the uncertainty surrounding the moment of death, through the fantasm of freedom as a landscape of the extinction of suffering and hard work, as well as of bad people. The prohibition of the mother’s tears is an image that evokes the maternal otherness as a witness of that liberation, where there should instead be grief and mourning. We may ask how the vulnerability faced in the professional activity articulates with the benevolent and liberating death, a sign that acts as a fantasmic shield against the fear of losing her life.

Subsequently, the director points out her “courage” to talk about her life in the interview, because of what her daughter might think if she came into contact with the material in the future. Alessandra replies:

It’s not courage. It’s normal, I think it is normal. I talked to her, I think it’s normal. People nowadays, in the world we live in, their minds are in the world of the years before Christ. It’s over, everything normal in the world. People are born of all sorts. Men with men and women with women, right [homosexuality]? There’s fifty women for each man. There are loads of things that shouldn’t be normal. People stealing from people, politicians stealing from people, thieves stealing from poor people, right? (. . .) People think it’s normal, so

why would my job be considered abnormal? Should someone come and stone me? That's why I really talk about it, in my neighborhood everyone knows [that she works as prostitute]!

Alessandra deconstructs the moral potentiality of the question about *courage*. Through a metonymic approach to the transfiguration of the normality of life in culture, both in the field of sexuality and in the universe of the common good, Alessandra claims her share of normalcy. The indeterminate and opposing cultural otherness is signified as backward/conservative, "[their minds being] in the world of the years before Christ."

The inquiry that involves the metaphor of stoning and injustice emerges in the same discursive construction. This elaboration presents possible clues about the mythical and fantasmic dimensions that act in the construction of her own placing in regard to her activity in prostitution. The ambivalence implied between pleasure and disgust involved in the gains of the job, as well as the ambiguity about the sense of normalcy, is thus questioned in a passionate elaboration. The art of the encounter with Coutinho seems to trigger the fiction of her own self as a becoming. The fantasies thus arise in this perspective recreation of existence, provoking meanings that enable the transformation of ambivalences in the relationship with the objects of experience. In this act of speech, more than giving a description or an answer to Coutinho's question, Alessandra reconstructs, with potential aesthetic contours, the familiar strangeness that participates in her way of life. At the end of the interview shown in the documentary, Coutinho tells her that she, in the pre-shoot stage, would have stated that she liked to lie. Here's a brief snippet of the interaction:

I am a huge liar, I tell lies and I think that for us to lie we have to believe! We have to believe the lie for the it to work! And I'm a huge liar. Huge! I even cry to believe my own lies. You know that **there are lies that I believe to be true?**

What did you lie about in today's conversation?

Aahhhh, I didn't lie at all. Yesterday I lied to them because I didn't want to come to this interview. I said: "I'm going out and so I don't know what time I'm going to get there."

Because I didn't want to come, I was scared. As soon as I left, I came back, because I didn't want to, I was afraid. But today I really forgot! It didn't even cross my mind that I had an interview. . . . **I didn't even remember.** But yesterday I lied, so you can see how truthful a liar I am (smiles). I tell lies but also the truth!

In this passage we find a curious apparently paradoxical enunciative formation: a truthful liar who tells lies but also the truth. As if she were the actress of her own script, Alessandra seems to speak of the fictional abilities of her lived life: "I even cry," making the lie an art of its truth, invested with an almost playful authenticity in her account, the sacred seriousness of the game, as Gadamer would say. This is the way in which Alessandra becomes the author of her own narrative, revising aesthetic-fantasmic fictions that undergo metaphorical and meaning constructions for the alterity of her own life.

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Flourishing

► Positive Psychology

Flow

Jef J. J. van den Hout^{1,2} and Orin C. Davis^{3,4}

¹The Hague University of Applied Sciences, Research Group Sustainable Talent Development, The Hague, Netherlands

²Flow Concepts, Tilburg, Netherlands

³Quality of Life Laboratory, New York, NY, USA

⁴New York University, New York, NY, USA

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Introduction

Imagine a group of 26 strangers who came together for a student competition centered

around solving a sustainability issue. It is a long competition, which means that the team will need to divide tasks strategically, stay engaged, focus long enough to actually learn something, and create something meaningful that will help them when they graduate. That is a rather tall order, but the Solar Team Eindhoven (STE) of the Eindhoven University of Technology (Eindhoven University of Technology-TU/e) actually pulled it off in the World Solar Challenge in Australia and made a solar-powered car while they were at it. What does it take to empower a team to perform at that high of a level with high engagement, good division of labor, and long term commitment? With so many business challenges and day-to-day tasks depending upon knowledge work and teamwork, the answer is priceless, and we propose that it is *flow*.

Flow

The concept of flow (colloquially called “being in the zone”) was first published widely in 1975 by psychologist Mihaly Csikszentmihályi, who initially defined the construct as “a holistic sensation that people feel when they act in total involvement” (Csikszentmihályi 1975, p. 36). Over the intervening decades, he and his colleagues published many works about how flow experiences are considered by individuals to be some of the most enjoyable, rewarding, meaningful, and engaging they have experienced, and typifies flow as involving automatic and effortless action coupled with intense focus. The flow experience can therefore be viewed as an optimal experience of intense involvement, focus, and satisfaction in the present moment, and one that according to research (e.g., Csikszentmihályi 1997) is involved with higher levels of performance, as well.

The Nine Elements of the Individual Flow Experience

Csikszentmihályi and colleagues (e.g., Csikszentmihályi 1997) conceptualized flow using nine elements that are all present when a person experiences flow (see below). Three of

these nine elements tend to be solely emergent/experiential and are hard to create or promote intentionally and attempting to evoke them often backfires. The other six elements are more amenable to being generated by the individual either internally or by using aspects of the environment, which are often considered the prerequisites for individual flow (cf. Csíkszentmihályi 2009; Van den Hout et al. 2018). The presence of these prerequisites increases the likelihood that flow occurs or augments the intensity of the flow experience. The distinction between elements of flow that are readily developed (a.k.a., prerequisites, antecedents, or preconditions) and elements that are purely emergent (a.k.a. experiential characteristics, facets, components, or indicators) is illustrated in Fig. 1.

The Prerequisites for Flow

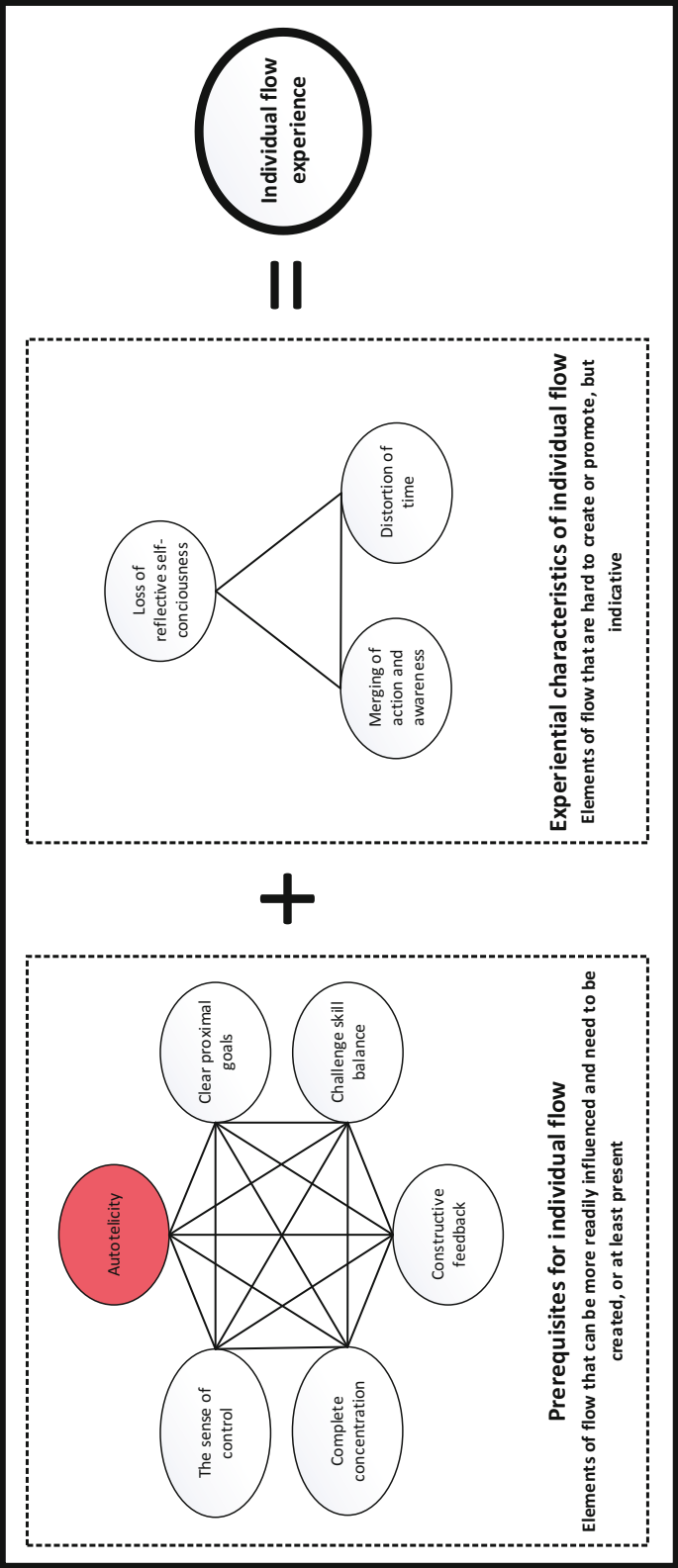
There are six elements of the flow experience that are readily modified by the individual to increase the chances of a flow experience occurring during the execution of a task (there is never a guarantee; cf. Csíkszentmihályi 1997; Hektner et al. 2007). One of the main elements is *autotelicity*, which is about engaging in a given activity because it is intrinsically rewarding and worth doing for its own sake. This is one of the original core aspects of flow (Csíkszentmihályi 1975) and demonstrates the value of being judicious in selecting activities that are appropriate to the situation and that are a fit with the individual's interests and current state (Csíkszentmihályi 1997; Davis 2010; Van den Hout and Davis 2019). In addition to careful selection of activity, one can increase the probability of a flow experience by setting *clear, proximal goals* about which one can receive *clear, timely feedback*, both of which help the individual direct their efforts in *putting a high level of skill towards meeting a commensurately high challenge* (Abuhamdeh and Csíkszentmihályi 2009). This, too, represents a controllable element of the experience insofar as the individual can direct the level of effort they choose to put in, and can establish a challenging goal that is likewise motivating and can emphasize the intrinsically motivating aspects of the task (van den Hout and Davis 2019). This is not inconsistent with longstanding linear models of

the flow experience (e.g., Fig. 2), but fits even better with more recent research indicating that flow is more of a continuum (Davis 2010) and a discontinuous, complex process (Ceja and Navarro 2009, 2011; Hektner et al. 2007; Hetland et al. 2018).

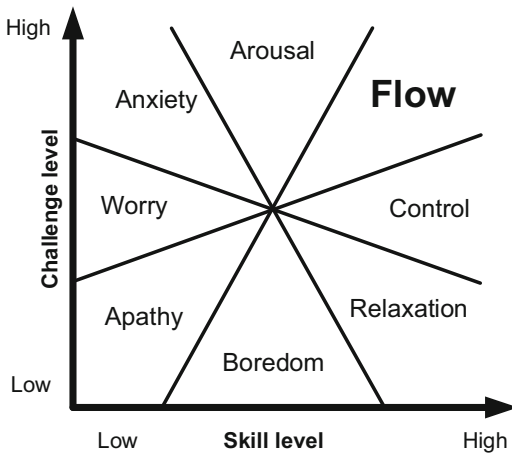
Still, Fig. 2 can be used as a clue for selecting a challenge and skill level based upon the desired experience and determining a growth trajectory for the individual so that they can stay in the sweet spot where flow is most likely. As noted above, the task experience can vary significantly, which means that one is likely to cycle erratically between relaxation, control, arousal, and flow, with a goal of staying within the flow continuum as much as possible.

The fifth element of flow is a form of *complete concentration* that excludes all distractions. The full measure of one's thoughts, efforts, and attention is applied only to the current activity. One can train in this aspect of flow through a number of different exercises (e.g., meditation, breathing, visualization) so that one can readily switch to deep task focus. One can also remove possible distractions in the environment (e.g., telephone) or internally (e.g., releasing work pressure, stress, uncertainty, fear of failure) that could act as disruptors. It is critical to note, however, that deep focus is only one characteristic of flow, and is in no way sufficient to do anything more than increase the likelihood of flow occurring if the context, goals, feedback, etc., are likewise at optimal levels during an *autotelic* activity (cf. Csíkszentmihályi 1996).

The sixth element of flow is a *sense of control* over the task at hand, such that one *does not fear failure* (Jackson et al. 2008). It is not that failure is impossible in such a case, for the presence of a high level of challenge often implies the very real possibility of failure, but rather that one is focused on achieving the goal and confident that one has the wherewithal to succeed (Sawyer 2007). The opportunity to prepare (e.g., training, practice, analysis, positive self-talk) for the activity, and consequently reducing the fear of failure and increasing confidence, makes this element also a prerequisite of flow. This goes hand-in-glove not just with deep concentration and goals set, but also with autotelicity. When one is engaged in the action for the sake of the activity, one is less



Flow, Fig. 1 A conceptual equation of the individual flow experience



Flow, Fig. 2 Challenge skill balance required for flow (adapted from Massimini et al. 1987; Csíkszentmihályi 1997)

inclined to worry about failure precisely because the focus is on the activity.

The Experiential Characteristics of Flow

As these six prerequisites increase the chance of experiencing flow, it behooves one seeking an optimal experience to aim for these conditions in advance. One must be mindful, however, of the role of context (Davis 2010) and that not every element can be controlled. Rather, one puts in the maximum effort to increase the likelihood of flow and then allows the activity to proceed and permit flow to emerge. One of the main emergent elements is the *merging of action and awareness*, in which one's actions feel spontaneous and automatic even as one actually has control over the activity (Quinn 2005). Consistent with this is the *loss of reflective self-consciousness*, in which one loses sight of one's own role as an actor or agent in the situation, and likewise the *distorted sense of time* (either contracted or dilated), both of which tend to be byproducts of the deep absorption that occurs during flow (cf. Kihlstrom 2008; Tellegen and Atkinson 1974). Along with the seven prerequisites for flow, the emergence of these three experiential characteristics clearly signal that an individual flow experience has occurred.

The Benefits of Flow Experiences

Flow experiences are considered profound and tend to improve the individual's overall satisfaction with life (Nakamura and Csíkszentmihályi 2009). Flow also promotes persistence in the activities in which it occurs (cf. Shernoff et al. 2014; Amabile and Kramer 2007, 2011), and likewise a higher degree of creativity and increased self-efficacy (the belief in one's own ability) and development (Csíkszentmihályi and LeFevre 1989; Csíkszentmihályi 1997; Ilies et al. 2016; Asakawa 2010). As such, flow can play an integral role in maximizing people's potential. But human beings are social creatures, and the demands of the business world today are so complex that no single individual can solve the extant challenges. Thus, it is important to look at flow at dyadic (e.g., Snow 2010) and team levels (van den Hout and Davis 2019).

Team Flow

Before diving deeply into the complex workings of flow and interpersonal dynamics, it is important to provide a working definition of the terms "team" and "team dynamic." A *team* is "a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable" (Katzenbach and Smith 1993, p. 112), and a *team dynamic* is the sum of all of the actions, processes, and changes that happen within a team, either holistically or among its members (Forsyth 2009). This collection of forces affects the team's behavior and performance and is created by any number of factors. Extrapolating flow to the team level, *team flow* is the shared experience in which all team members are completely involved in a collaboration towards a gratifying and challenging common task. During this moment of optimal collaboration, they perceive adequate abilities to cope with the challenging situation and they have the feeling that their collaboration runs smoothly and effortlessly and consistently makes progress (van den Hout et al. 2011; Van den Hout and Davis 2019).

This description shares aspects of Pels et al.'s (2018) definition of group flow, which they defined as:

[A] shared state of balance within a group as represented by (a) fluent, positive interactions within the group, (b) a high collective competence of the group, and (c) a collective state of mind of the group by means of positive relationships between group members, often resulting in optimal collective performance and creativity, and making group flow a positive collective experience. (p. 18)

The description of team flow above is also similar to Sawyer's (2007) definition of group flow, which is defined as "a peak experience, a group performing at its top level of ability" (p. 43), where he enumerated ten flow-enabling conditions.

Building upon Csíkszentmihályi's work on flow, the literature on team dynamics (e.g., Salas et al. 2008), and the pioneering work of several researchers on plural forms of flow (e.g., Snow 2010; Sawyer 2006), Van den Hout et al. (2019) defined team flow as a shared experience of flow during the execution of interdependent personal tasks in the interest of the team, originating from an optimized team dynamic. As shown in Fig. 3, this optimized team dynamic is defined by eleven elements that enable and indicate the experience of team flow, seven of which are mainly prerequisites (enablers) and four of which are primarily emergent/experiential characteristics (indicators).

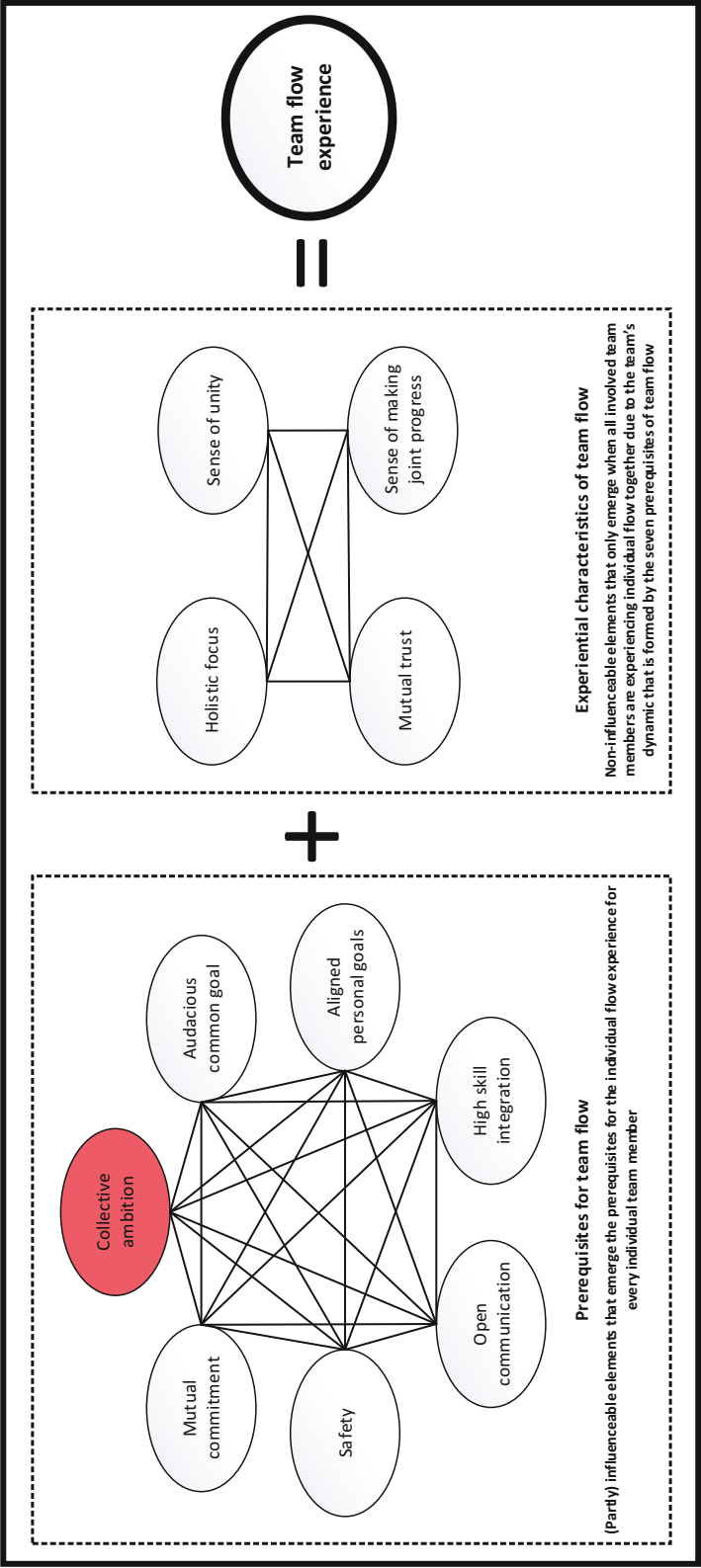
The Eleven Elements of Team Flow

The Prerequisites of Team Flow

Team flow experiences often initialize through a *collective ambition*, which reflects a shared intrinsic motivation (analogous to autotelicity in individual flow) to form a team and take on a common task that is meaningful and consistent with the values of the team members. This could be something enjoyable, like a game of soccer, or something important like providing good care to a patient. In all cases, the collective ambition also includes a recognition of the uniqueness of each of the team's members and how that will contribute to fulfilling the goal, which is a crucial foundation for mutual trust and coordination of efforts.

If there is a collective ambition in a team, the team members often jointly derive one or more challenging *common goals* to achieve concrete/recognizable results. From this, the team members are able to create *aligned personal goals* that they find personally meaningful (and often match self-designed developmental goals) and that draw upon their unique skills and values. In so doing, team members are able to *integrate high skills*. To be able to experience flow during the execution of tasks, it is important that people have a stimulating challenge that requires them to apply high levels of personal qualities, skills, or competencies. The high challenge needs to preclude a guarantee of success without inducing anxiety, which reflects a healthy tension that demands focus and energy.

For each team member involved, in order to achieve this optimal integration of team members' forces, it must also be clear at any given time who is engaged in which tasks and how those efforts relate both to the other team members' activities and to the team's overarching goal(s). This requires feedback on one's own task, the sub-team's task (as relevant), the group's [coordinated] efforts, and the collaboration process. In order for this feedback to meet the requirements of being clear, constructive, and timely, the team needs *open communication* and *safety*. Each team member must feel physically, psychologically, and socially safe to perform their individual tasks and to respond to what the others are doing. To achieve this, unnecessary and unacceptable risks need to be eliminated while giving team members the ability to take smart risks that are commensurate with their skills. If everyone's abilities are respected and viewed as integral to the team's success, cogent critiques that proceed on that basis will necessarily be positive and constructive even as they maintain the requisite level of candor to be clear and timely. This allows for clear lines of accountability and for task-oriented coaching, which in turn promotes a sense of both individual responsibility and of *mutual commitment*. The latter promotes compliance with agreed-upon rules of conduct, safety measures, and maintenance of personal and team integrity. These seven prerequisites allow each individual team member to experience flow while



Flow, Fig. 3 A conceptual equation of the team flow experience

performing their personal task(s), which sets the stage for the team's experiencing a group-level of flow.

The Experiential Characteristics of Team Flow

Team flow is when all team members experience flow during the execution of their interdependent tasks, which gives the collaboration its own unique character. Just like flow, team flow is an optimal work experience, but it adds a social dimension. Collaboration is optimal when the following four characteristics are present: *a sense of unity* as if the team were one acting organism; *a sense of joint progress* as if building effortlessly upon each other, so that team members feel the synergy and are performing at a Gestalt level above the sum of their abilities; a sense of implicit *mutual trust* with the belief that the team's task will be accomplished successfully; and a *holistic focus* on the shared task. All team members perform their personal tasks with deep concentration and in harmony with the (higher) goal of the team.

The Team Flow Model

An integrated model of team flow is contained in Fig. 4, in which the connections between the seven prerequisites and four experiential characteristics are highlighted. Collective ambition, the red octagon, is a starting point and anchor point. The other six prerequisites of team flow reflect the direction in which the team members want to move together, the attributes of a positive and supportive work environment, and a clear and challenging task division. These conditions, when activated by the collective ambition, interact with each other to activate the four experiential characteristics to promote the emergence of team flow.

The Benefits of Team Flow Experiences

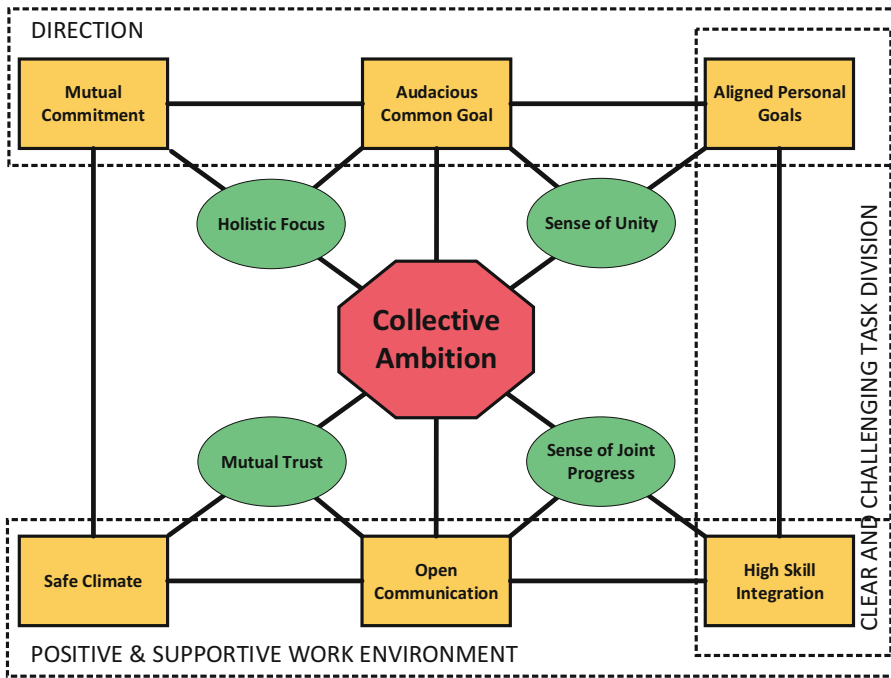
The description of the 11 elements of team flow already contains a number of possible benefits. Most people like it when there is a challenge, clarity, structure, things run smoothly, and they

are deployed on tasks at which they are skilled and for which they are intrinsically motivated. Receiving feedback from team members may be difficult at times, but if this is done positively and constructively, it also offers growth opportunities. Seen in this way, there are already quite a few benefits to be gained from the team flow experience itself (cf. Csíkszentmihályi and LeFevre 1989). In addition, studies have suggested that team flow leads to better team performance, more individual happiness, a more positive atmosphere (Van den Hout et al. 2019), and more creativity (Verhoeven 2018). Moreover, the shared experience of engaging in a meaningful and intrinsically motivating activity while serving a collective ambition strengthens the team experience and the affinity (in all forms) for the activity, which also increases the desire for the team to reconvene (Sawyer 2007; cf. Asakawa 2010; Csíkszentmihályi 1990; van den Hout et al. 2017). It remains important to remember, however, that flow is not a lasting experience and comes and goes over the course of the team's endeavors. As such, a team should endeavor to promote flow, but not to obsessive levels, as these can lead to burnout, tunnel vision, and excessive risk (cf. Schüller 2012; van den Hout and Davis 2019).

The Continuum from Individual Flow to Team Flow

While team flow arises from individual flow experiences, and the chance is greater if the prerequisites for individual task flow are created via the team flow prerequisites, there are many in-between levels of flow that occur during team activities that warrant analysis (van den Hout and Davis 2019):

- *Individual task flow*: Flow experienced during the execution of personal tasks for the team's purpose varying from microflow to deep flow (cf. Davis 2010).
- *Interactive flow*: Flow experienced during interactions with other team members while completing a task together. These interactions



Flow, Fig. 4 The Team Flow Model (adapted from van den Hout et al. 2011; van den Hout 2016)

emerge from the team dynamic, and during these interactions team members get “in sync” with each other. This is sometimes referred to as interactional synchrony or flow synchronization (cf. Snow 2010; Keith et al. 2014; Magyaródi and Oláh 2015; Walker 2010). For interactive flow to take place, each person involved in the interaction should experience individual task flow and the interaction should not directly involve all team members simultaneously.

- *Contagious flow*: Experiencing flow through contagion by other team members’ individual task flow experiences while completing a task together. This means team members are affected by the flow experiences of their fellows, increasing the intensity of their own flow experiences as they perform their individual tasks. Contagion is the reason team flow often starts with one team member’s individual flow experience igniting a fellow teammate’s, who in turn ignites another and so on until a tipping point is reached where the remaining team members “sync up” or “plug

in” to the flowing team dynamic (cf. Bakker 2005; Walker 2010).

- *Unit flow*: The experience of flow at the unit level (one hierarchical layer higher than the individual level). This means that the unit’s performance as an entity is functioning “in flow,” as when the collective awareness of all members in that performing unit are smoothly merging with their joint actions. At this moment, the unit is functioning at the peak of its abilities (cf. Sawyer’s group flow definition, 2003; Salanova et al.’s collective flow definition, 2014; Zumeta et al. 2016).

Notably, all of the experiences above occur during team flow and highlight how individuals can feel that they are given the space to perform their tasks autonomously while still maintaining a sense of connection with the team.

Sometimes the performance of a personal task readily rises to the collective level because of the tight link required between individuals’ tasks. Consider, for example, a rowing team or a healthcare team that performs a surgical

operation. Though individuals are performing separate tasks, the effect of every person's task has a clear and direct impact upon every other person's task and upon the collective performance. In other teams, the mutual link is less strong, such as in a home care team where the nurse goes out alone and the interaction with teammates is often not direct (and can even be turn-based) when providing care. Despite the cumulative nature of each person's work, the lack of real-time integration of the effects makes team flow more elusive.

Disruptors that Block Team Flow Experiences

In addition to looking at the factors that promote team flow, it is worthwhile also to review team flow inhibitors, such as negativity, politics, ambiguity, fear of failure, and insecurity (van den Hout et al. 2017). Corollary to the items above, there are four main categories of obstacles. Motivation is a major underpinning of flow, but is readily killed by laxity and bureaucracy, both which inhibit accountability, trust, and the freedom to take the requisite smart risks. As open communication and trust are essential to team flow, miscommunication, destructive criticism, personal conflict, and gratuitous negativity are inimical to the flow experience. Just as clear goals and timely feedback promote flow, a lack of clarity, external pressures, limited challenge, and limited feedback inhibit team flow. And, notably, anything that causes distraction is going to remove any possibility of flow emerging. The good news about these pitfalls, however, is that they are relatively easy to avoid and remedy with proper precautions, planning, and coaching.

Team Flow Catalyzes Unprecedented Possibilities in Challenge-Based Learning Environments

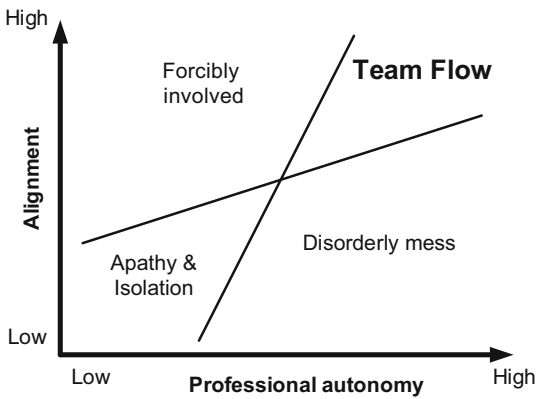
In today's practice, be it in schools, business, or daily life, intricate challenges are increasingly

appearing. To answer the call of these complexities, the education system (writ large, and including adult and professional education) has started developing *challenge-based learning environments* (CBLEs), which are crucibles for developing the intellectual and social skills to go after the toughest problems as a team (Nichols et al. 2016).

Needless to say, CBLE's would benefit significantly from ensuring that participants learn how to foster team flow. To achieve this, it is first of all important that all participants feel connected to each other and willing to commit to a collective ambition. This serves as the proverbial "stake in the ground" amidst the chaos and complexity and anchors the team to a point on the horizon.

From there, it is helpful to turn first to the experience of individual flow, looking at how each member of the collaboration can maintain their professional autonomy (freedom to act based on expertise) in a way that visibly and uniquely contributes to the team. Participants need to know how things are going and how they can contribute individually to take the next step together.

It is therefore important that everyone has the freedom to be themselves, act upon their personal values and views, and from there contribute to the cooperative effort. In this way, team flow can develop without the potential negative aspects that can arise in the emergence of a collective mind. Consider, for example, irrational decision-making by *groupthink* (Janis 1971) or exaggerating sentiments, showing impulsive behavior, or failing to reason, as described by Le Bon (1896) in *Psychologie des Foules*. Rather, professional autonomy must be balanced with alignment (see Fig. 5), in which the team uses the collective ambition as a foundation for establishing individuals' and units' challenging subgoals/milestones (Van den Hout 2016). What remains is to find a safe, efficient, and inspiring way of tuning into and receiving feedback on one another's work, and the literature on team workflows is rife with information about this (e.g., Hackman and Wageman 2005).



Flow, Fig. 5 The balance between alignment and professional autonomy (van den Hout and Davis 2019)

Once the group is aligned, it becomes necessary to create systems of accountability and methodologies for constructive feedback. This can be done, for example, on the basis of the following questions:

- Is there clarity about the expected team result?
- Is it possible for individual team members to join forces to form a dynamic/flexible performance unit?
- Is it possible for individual team members to experience individual flow during the performance of their personal task for the team?

If working groups are formed in the CBLE, not only must a joint assignment based on the collective ambition be formulated, but, as above, the instructor should work with the team to guide them towards developing the additional conditions that significantly increase the chance of team flow emerging and likewise keep disruptors out. As these conditions develop, the coach can focus on smoothing interactions and highlighting bottlenecks and disruptors as they emerge. A skilled facilitator can have the team working to counter these inhibitors, which can in turn strengthen the relationships among the team members.

By focusing on team flow, the team takes steps forward more quickly and participation in the

CBLE is likely to be experienced as useful, enjoyable, educational, and effective. If the desired solutions have not yet been achieved, the seed may have been planted to continue this in the future within future work environments or during subsequent participation in other CBLEs.

The success of the team flow model and ideas around it lies in its simplicity, its focus on the core ambitions, and its roots in positivity. The model has now been proven effective within healthcare organizations, IT companies, research and development institutions, construction companies, and educational institutions (van den Hout 2016; van den Hout and Davis 2019). In order for teams to experience team flow, it is the responsibility of organization leaders to ensure that the elements from the team flow model can be present for each team. They should therefore not bother the teams too much with unnecessary procedures, meetings, and policies, but rather provide the resources and freedom for them to be self-determining. Likewise, an important role for leaders is supporting teams' collective ambitions and challenging team goals (results) that fit the overarching values of the organization, particularly with the provision of personnel and resources. Hard as it may seem to some, it is actually incumbent upon leaders to provide these resources and then step back and leave the teams to their flow and the excellence it promotes.

The Eindhoven Solar Team has already become the world champion four times, and members of the original team are now bringing the first solar car, called the Lightyear One, to the market. They serve as a prime example for how a challenging collective ambition can be turned into a reality through team flow, and thence to solving problems of global proportions.

Cross-References

- [Collaborative Creativity](#)
- [Complexity](#)
- [Creative Learning](#)

- ▶ Creative Mindsets
- ▶ Creativity
- ▶ Mindfulness
- ▶ Positive Psychology
- ▶ Talent Development
- ▶ Uncertainty
- ▶ Zone of Proximal Development

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Forecasting

Roberto Poli

Department of Sociology and Social Research,
University of Trento, Trento, Italy

Abstract

Forecasting consists in the analysis of data and their future extrapolation. Forecasted events result from different types of formal models analyzing data on trends. Two fundamental assumptions governing forecasting models are the adoption of extreme time windows and the principle of continuity. Megatrends are forecasts *on steroids*. They refer to major transformations that influence many other changes, profoundly changing social forms and mechanisms and impacting on different economic sectors.

Keywords

Time window · Continuity · Megatrend ·
Countertrend · Risk management ·
Consequence assessment

Introduction

Forecasting consists in the analysis of data and their future extrapolation. For a lively and non-technical introduction to the joy of statistics, to be recommended is the recent work by Spiegelhalter (2019).

Forecasted events result from different types of formal models analyzing data on trends – from the trend of inflation to changes in GDP, from the unemployment rate to climate change. Like all other models, forecasting models are based on some fundamental assumptions which condition their validity. Two typical areas in which forecasting models are carried out are econometrics and climate change.

Perhaps the most obvious limitation of econometric forecasts is that they work for *short time windows*: 6 months, 1 year, 2 years, etc., at even 3 years no one takes them seriously any longer. Unlike econometric forecasts, climate change forecasts adopt long, if not very long, windows, close to or longer than 100 years; this is because they require long time frames to separate the signal from the noise – that is, to distinguish the background trends from accidental and momentary changes. The second fundamental assumption underlying forecasting models is what I call the *principle of continuity*: the idea that the system considered will continue to work roughly as it has worked thus far (Poli 2019). This is an extremely reasonable assumption. If someone were to say that next year Italy's GDP will increase by 8%, we would all burst into laughter – or tears. Looking at how Italy works, the ruling and entrepreneurial classes, and the bureaucracy that cages the country, one is forced to admit that the idea that the Italian GDP can grow significantly is unrealistic at the moment. Continuity in the case of climate change models is provided by the constancy of the laws of physics.

Econometric and climate change models adopt extreme time windows – either very short or very long ones – and are based on their own principle of continuity. In both cases, the technical and scientific community is firmly in favor of them. So, what is wrong with these models? Nothing. Both are serious, robust and firmly anchored in sophisticated scientific and methodological knowledge. The problem is that we might also be interested in intermediate time windows (of 10, 30, or 50 years) and in discontinuities, surprises, and new circumstances.

With the obvious exception of demographic models – which also work for intermediate time windows and adopt their own continuity principle – forecasting models simply do not work with intermediate windows and with respect to changes. It could also be added that forecasting models do not work even with predominantly qualitative data or when the information available is not reliable (this happens with economic data much more often than people think, and it is no coincidence that such data

must be constantly reviewed). When we are dealing with intermediate windows and changes (but also with qualitative data or spurious information), we must necessarily adopt a different perspective. This is where the transition from forecasting to foresight takes place (see the entry ► “Foresight”).

Before proceeding, I should rapidly comment on the concept of time window (Poli 2019). The distinction among short (0–5 years), intermediate (10–50 years), and long (100 years and more) time windows is obviously vague and incomplete. It only serves as an initial orientation and does not help us with cases not explicitly mentioned. Is an 8-year window short or intermediate? The point is that the nature of the window depends not only on the technical properties of the model but also (and above all) on what we are observing. If we talk about mobile phones, 5 years is comparable to a geological age; if we are talking about changes in values, we must consider at least one or two generations. In any case, what is needed by futurists is a window long enough to bring out significant variations. This is the real intermediate window. A shorter one fails to detect the changes underway, a longer one overlaps and risks confusing different cycles of change. The exact specification of the time depth of the window depends essentially on the system under observation and the topic under discussion.

Megatrends and Related Concepts

Megatrends (occasionally known as macro trends or global trends) concern a series of changes that have been in progress for many years – typically for decades – and that are likely to last for a long time. Megatrends are forecasts *on steroids*. Megatrends have to do with major transformations that influence many other changes, profoundly altering social forms and mechanisms and impacting on diverse economic sectors. The term “megatrend” was introduced by Naisbitt in the 1980s. Since then, the term has been used in many senses, ranging from the journalistic acceptance of Naisbitt to the more rigorous one of Smil (Naisbitt 1982; Smil 2008).

Recent developments suggest different ways to construe the field of megatrends. While Gaub distinguishes between megatrends and triggers, Poli distinguishes megatrends from explorations (Espas – European Strategy and Policy Analysis System 2019; Poli 2019). The difference between megatrends and triggers depends on their velocity: megatrends concern changes proceeding at a slow pace, while triggers generate much faster, even sudden, changes. On the other hand, the main difference between megatrends and explorations is that the fundamental variables of the former are fixed, while those of the latter are open and oscillating. Put otherwise, megatrends have visible endpoints, while explorations may result in widely different outcomes.

Like megatrends, both triggers and explorations also involve coordinated series of changes. The difference is that these are developments with results that are still open and anything but predictable. Consequently, there is room for maneuver: our decisions and actions can divert the underlying processes in different directions. While it is almost impossible to change a megatrend unless in exceptional circumstances, explorations are much more exposed to interfering factors. Two examples are the new Silk Road project (aka the Belt and Road Initiative) and the labor market (Poli 2019).

However different they may be, the two proposals by Gaub and Poli evidence the need to develop a more nuanced understanding of megatrends and their accompanying phenomena.

With reference to the four layers of Futures Studies presented in the entry “► Foresight,” megatrends and explorations correspond respectively to forecasting and foresight, albeit *on steroids*. I refer to that entry for the main differences between forecasting/megatrend, on the one hand, and foresight/exploration on the other. The three most significant aspects are the following: both classifications refer to models; the difference between the first and the second group is sharp (i.e., no smooth transition exists between forecasting/megatrend models and foresight/exploration models); and the former group is based on rote iterations of past patterns, while the second group includes novelties and surprises.

Megatrends are so deeply embedded in the overall functioning of the world that the mere idea of trying to deflect a megatrend seems implausible. The possibility of deflecting a megatrend is *close to nil*, although there are occasionally some rare possibilities of intervention (Poli 2019).

One of the most serious errors that a futurist can commit is to confuse explorations with megatrends, that is, to say, take a process that, all in all, can still be oriented, as a process about which there is very little that can be done.

Megatrends are often accompanied by secondary trends that move in the opposite direction. For example, the constant global growth of cities is accompanied by an opposite movement of flight from cities back to the countryside. The repopulation of some valleys in the Alps is a good example of this countertrend: after decades of the depopulation of mountain areas, we are now witnessing an opposite flow of people who decide to return to live there. Paying attention to countertrends can be fruitful, because they are often indicators of potential market niches. What really matters is not to confuse one with the other, the dominant megatrends with the secondary countertrends that counteract the former's effects. The following are some examples of megatrends: population growth, aging population, expansion of cities, and increased energy demand. Each of them is able to shape our long-term futures for many decades ahead.

Windows of Opportunity

Table 1 shows the central projection (i.e., neither the most optimistic nor the most pessimistic) of the demographic data published by the United Nations Population Office (UN 2015a, b, 2017).

For their analysis see Poli (2019). Here I only comment on the demographic explosion of Africa.

The expectation of an enormous African demographic explosion stems from the fact that 41% of the African population is in the 0–14 age group and that not yet ongoing in Africa is the demographic shift from five to eight children per

Forecasting, Table 1 UN central projection (in millions)

Region	2017	2030	2050	2100
World	7550	8551	9772	11,184
Africa	1256	1704	2528	4468
Asia	4504	4947	5257	4780
Europe	742	739	716	653
South America and the Caribbean	646	718	780	712
North America	361	395	435	499
Oceania	41	48	57	72

woman to one to two children per woman. Two actions can affect this process: sending girls to school and starting to improve the overall quality of life, thereby triggering a certain level of economic development. The first action is quite simple: since teachers and lecturers are underpaid in every part of the world, building and developing a generalized educational system would entail a relatively low cost. African countries should be given inputs, stimuli, and help for the swift development of a new indigenous teaching class. Given extensive and widespread investment in modern educational facilities, this would lead to a rapid increase of literacy in both urban and rural areas. However, the educational path should be long, and it should not stop at primary education. In fact, data show that for Africa, an elementary education would not be enough to free young women from subservience (Zinkina and Korotayev 2014). Education should also be gender-specific, as only female literacy and *upskilling* can guarantee the reduction of an otherwise unsustainable birth rate.

It is difficult to trigger economic development for various reasons: the well-known fragility of African agricultural land, the failure of countless humanitarian interventions, the international exploitation of the continent's natural resources, and the high levels of corruption of many local governments. These are all serious and important problems that cannot be underestimated. Nevertheless, according to data from the World Economic Forum, stable jobs in Africa grew by 3.8% between 2000 and 2015 (with a +1% increase in the workforce, an insufficient, but nevertheless positive, improvement); the strong urbanization in progress contributes to increasing

productivity (cities have productivity three times higher than that of rural areas); and consumption is also growing (with an annual increase of 4.5% between 2000 and 2015). Finally, the ability of Africans to use modern technologies to overcome infrastructural limitations should not be underestimated: East Africa, for example, is already the global leader in mobile payments (Poli 2019).

Back to Forecasting

Understanding the differences between forecasting and foresight can be aided by a short analysis of the axiomatic system developed by Kolmogorov, perhaps the most authoritative source of modern probability theory (Kolmogorov 1956). Kolmogorov's second axiom states that the space of the event to be calculated must be fully specified and closed, otherwise the probability of each single event (or series of events) is meaningless. This is an important limitation: to say that the probability of an event can only be defined if the space of the event is closed is to argue that a probability assessment can be conducted in a significant way only if we know a priori everything that is possible. No break-in of new circumstances, surprise, or unforeseen situations is permissible. This is tantamount to saying that to use probability we must have already tamed the future. As Derbyshire rightly comments, in this situation "the future is merely a shadow of the past and the present" (Derbyshire 2017). For this reason, using probability to address future challenges is "dangerous": because it "forces us to base our view of the future on what has happened

in the past” (Derbyshire 2017). Moreover, Kolmogorov’s third axiom states that the total sum of the probabilities of the events that make up the space of the events amounts to 1. That is, if a new event is added to the space of the events, the probability of the events already included must decrease. After all, there is also room for surprises and new elements, provided that the probability of the events already included is reduced accordingly. This is one of the reasons why surprises, i. e., unexpected events (those on the tail of a probability distribution), end up with minimal probabilities (which ultimately justifies their being set aside).

From Probability to Consequences

What can be done when probabilities cannot be assigned? One solution is to move from probability calculation to consequence assessment: trying to reconstruct the overall picture and focusing on the effects that may occur rather than on the probabilities that cannot be known. Understanding the fragilities of a system and trying to overcome them is much more productive than trying to calculate the probability of an event that could damage that system (Taleb 2012).

Moreover, in order to understand and manage rare events, it is useful to develop multiple perspectives integrating multiple points of view (psychological, sociological, normative, etc.) and different methods. Each of them has its own weaknesses and errors, which partly cancel each other out. When the results of different methods suddenly deviate together in one direction, we have a signal that may announce an incipient pattern change in a previously predictable system (Taleb 2007).

Thirdly, one can try to understand how things work together, their relational nature. This entails grasping situations in their context and explaining how they are related to each other, focusing on patterns rather than facts. There is no doubt that studying the mutual interconnections of various problems is a challenging task that in many cases cannot provide crystal-clear answers. On the other

hand, the difference between information and knowledge lies in the identification of patterns. It is also to be noted that analyzing risks isolated from their contexts involves studying something different from the original phenomenon, because an artificially isolated risk can behave (and as a rule does so) differently from how it would act in its own context.

Anticipatory Risk Management

Anticipatory risk management (ARM) is based on the assumption that the uncertainty of the future cannot be overcome. Uncertainty is exactly what is not addressed by traditional risk management systems, which I call “reactive.” Reactive risk management deals with gains or losses resulting from a probability calculation based on past data. It focuses mainly on the individual organization, proceeds by usually very simplified process schemes, and is based on known rules and risk profiles. Anticipatory risk management, on the other hand, focuses on exploring the uncertainties of unknown risk profiles.

The traditional approach to risk management delegates uncertainty to the accuracy of data and the methods used to measure measurable risks. However, risks must also be managed when data are unreliable or unavailable. For this reason, too, anticipatory risk management places uncertainty at the core of its analysis. It starts with an understanding of the importance of consequences regardless of their statistical significance and focuses on how to influence and manage events and the results that follow. Mitigating uncertainty also means learning to govern ambiguities and positional differences, such as those related to different worldviews (Poli 2016). Structured in this way, risk management is a multidisciplinary enterprise. Moreover, it should be stressed again that the idea of a risk independent of or isolated from its context makes no sense: there is no such thing as a “single risk,” with no relation to other risks.

Another distinctive feature of anticipatory risk management is the time perspective. Like any future-based approach, anticipatory risk

management adopts medium- to long-term time windows, because windows that are too short, like those normally adopted by reactive risk management, make many risks invisible. They disappear from the radar not because they have been addressed, but because the structure of the model adopted does not allow them to emerge. The forward-looking approach and the explicit adoption of medium to long-term time windows help decision-makers and entire organizations to cope better with uncertainty (Furlanetto and Poli 2018).

In normal situations, i.e., with foreseeable changes, anticipatory risk management is not a substitute for reactive risk management. It is in situations of real uncertainty, where the traditional approach is largely inadequate, that a forward-looking approach is indispensable. Unlike reactive risk management, anticipatory risk management recognizes that complex systems are not simply more complicated systems. On the contrary, anticipatory risk management defends the idea that simple systems (including complicated systems) and complex systems are two completely different categories (see the entry ► “Anticipation Systems”).

The perspective of the future aids understanding of why surprises and genuinely unpredictable changes are more significant than continuity. The temptation to look for premonitory signals and justifications ex post calms our anxiety, but it is illusory. The question is why the signals announcing changes are not seen and understood in time. What is surprising about the real estate bubble of 2008 is the number of people who predicted it and announced it in a clear and timely manner. The point is that decisions are taken “forward,” and this is quite different from reconstructing a story ex post.

Anticipation is required because of the uncertainty of the future. What is captured by methods based on the past only covers a few secondary aspects of what is yet to come. In this regard, Derbyshire is crystal clear: the temptation to use what we currently know and to ignore what we do not know, including the ways in which things may change in the future, is a dangerous by-product of the use of probability (Derbyshire 2017), or in Taleb’s terms, it is a dangerous by-product associated with misuse of probability.

What to do, then? A few pointers:

1. Understand that rare events are the new normal, and for this reason they must inevitably become a part of our strategies.
2. Pay attention to the models we use. After all, some events are considered rare just because our models tell us so; what if the problem is also due to the fact that we adopt unsuitable models?
3. Move from probability analysis to understanding the consequences of an event and eliminating the fragilities inherent in organizations.
4. Combine different perspectives and methods. When several indices change in parallel, we may see an incipient pattern change.
5. Study situations in their proper context and how things are related to each other, focusing on patterns instead of facts.
6. Move from the analysis of known, well-defined and confined risks to the exploration of indeterminate or unknown uncertainties (from reactive risk management to anticipatory risk management).

Cross-References

- Anticipation
- Anticipation Systems
- Foresight
- Futures Studies
- Risk

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Foresight

Roberto Poli
Department of Sociology and Social Research,
University of Trento, Trento, Italy

Abstract

Forecasting, Foresight, and Anticipation are considered to be the basic components of Futures Studies. Forecasting deals with data extrapolation; Foresight with the visualization of possible futures; and Anticipation with the translation of their outcomes into action. The overall structure of Futures Studies comprises the differences between megatrend and exploration, risk and uncertainty, and complication and complexity. Finally, the idea of Futures Literacy is introduced.

Keywords

Futures Studies · Futures Literacy ·
Forecasting · Anticipation · Risk ·
Uncertainty · Complexity

Introduction

Many futurists see Futures Studies (FS) as overlapping with, or almost defined by, foresight processes and methods. Indeed, the distinction

among different components of FS (which I will call “forecasting,” “foresight,” and “anticipation”) emerged from the evolution of FS itself. Early contributions to FS did not distinguish among them (de Jouvenel 1967; Ringland 1998; Schwartz 1991). As Cuhls notes, “initially (they) were used equivalently” (Cuhls 2003, p. 95). Subsequently, some distinctions were drawn, although they were usually characterized by areas of overlap (Cuhls 2003). Sometimes the overlap was between forecasting and foresight (Armstrong 2001), sometimes between foresight and anticipation (usually termed “planning,” see below), as with the expression “scenario planning” (Ringland 1998), sometimes among all three (Porter 1996). There are also a substantial number of futurists who have openly denied that forecasting methods pertain to FS. To make matters even worse, foresight has been variously interpreted as cognitive ability (Gary 2009; Hayward 2003; van der Laan and Erwee 2012), as organizational capability (Hines et al. 2017; Rohrbeck 2010; Rohrbeck and Kum 2018), as a process (Voros 2003), and as many other things as well.

In recent years, a new position has begun to surface. It advocates a sharper structuration of FS, and its main claims can be summed up in the following three theses:

1. The difference between forecasting and foresight is sharp, meaning that there is no smooth transition between them (Poli 2019; Tuomi 2019).
2. The reference to planning as the third component of FS is overly restrictive. Planning is only one way to use the future. The new, growing field of Futures Literacy provides the framework in which to distinguish different ways to using the future (Miller 2007, 2011, 2018). We therefore need a covering term ampler than “planning.” I will use “anticipation” as the name of the third component of FS (Poli 2017). It goes without saying that the connection between FS and FL should be clarified.
3. The distinction among “forecasting,” “foresight,” and “anticipation” is too indistinct and needs to be expanded in different directions to

develop positive connections between FS and the sciences (Poli 2019).

Forecasting, Foresight, and Anticipation

The new position sees FS as organized into the three sectors of “forecasting,” “foresight,” and “anticipation.” Put briefly, forecasting deals with data extrapolation, foresight with the visualization of possible futures, and anticipation with their translation into action.

Accepting that forecasting is actually a minimal component of FS is different from claiming that forecasting does not pertain at all to FS.

The purpose of the distinction between forecasting and foresight, on the one hand, and anticipation, on the other, is to avoid including widely different activities under the same rubric. There is a clear difference between representational activities, such as those aimed at extrapolating data, or visualizing different possible futures, and actions aimed at translating the former activities into strategy and action. For this reason, I prefer to clearly distinguish between forecast (extrapolation of data) and foresight (visualization of possible futures), on the one hand, and anticipation (translation of what has been seen into decisions and actions) on the other.

Thirdly, by adopting only one overarching category (foresight) and failing to distinguish among forecast, foresight, and anticipation, mainstream FS are unable to provide a framework that is able (i) to include further distinctions, such as those among megatrend and exploration, risk and uncertainty, and complexity and complexity, and (ii) to establish a dialogue with science, especially the human and social sciences (Poli 2017, 2019).

Finally, I shall also discuss forecasting and foresight as model-based activities. The concept of model that I adopt is very broad (Rosen 2012). Here the term “model” does not refer only or mainly to the formal models used by scientists; rather, it refers to any process, framework, structure, or activity that seeks to capture the development of a situation, a problem, or a phenomenon

under observation. In my conception, a model is any activity that looks forward to what might happen. According to this meaning, even fears and hopes are models (Poli 2016).

For further information on forecasting, see the entry ► “Forecasting”; for anticipation see the entry ► “Anticipation”. In what follows, I focus only on foresight.

When we deal with information that is not exclusively quantitative or with unreliable quantitative information, we need models that are different from predictive ones. In fact, the vast majority of models are not predictive.

Understanding the distinction between future (singular) and futures (plural) is often the first step in understanding how forecasts and foresights differ. We do not read *the* future: we do not have crystal balls; we do not read tarot cards; even less do we inspect the entrails of chickens. Anyone who claims to know how things are going to develop is a charlatan. Nevertheless, there is something we can do to try to understand how events might develop. We can discover *some* possible futures that will help us keep in mind the different ways in which reality might reveal itself. Central to this circumstance is therefore the passage from the singular of the future – almost as if it were there, in front of us and our only possibility were to go from where we are now to that particular place, along a path already traced – to the plural of futures. Things can go different ways, and if we see them, we can try to prepare and not be overwhelmed by new situations.

When we move from an implicit idea of the future to an explicit idea of it, a number of operational frameworks open up. First, the value of foresight emerges: seeing the ways in which situations can evolve enables us to try to prepare ourselves – we may not succeed, but at least we can try. The explanation of the possible futures linked to foresight also has clear ethical relevance: if one sees what might happen, one must take responsibility for what one will do or not do. It should also be noted that, as natural as it may be to refer to the future as the cradle of oncoming problems, this is still only a partial view. Problems are never separated from opportunities. Where there are

problems, there are also opportunities to be exploited. In both cases, the logic is the same: if we see the process that is under way, we can try to intervene; if we do not see it, we may be overwhelmed by adversity, or we may not grasp its potential.

This is all correct, but it conceals a problem. Forecasts are also often made in the plural (central projection, higher, lower) and may have various levels of confidence: for example, climate change models include ranges of extrapolations to the future. The difference lies in the way in which the future is made explicit: in the case of forecast, the future is constructed as a repetition of patterns from the past, while in the case of foresight, the future also contains authentic innovations and discontinuities (Derbyshire and Wright 2017; Tuomi 2019). A model of the future that does not include surprising changes is not a true model of the future.

Expanding the Framework

The difference among forecasting, foresight, and anticipation constitutes the first layer of FS. One needs further thematic layers to represent the richness of FS better. The overall structure is schematized in Table 1 (Poli 2019).

For each layer, the last factor is permanently linked to anticipation, i.e., the component responsible for translating the results of model representations into action. The first two factors, on the other hand, refer to different classes of models: megatrends, risk models, and complicated systems belong to the category of forecast models; explorations, uncertainty models, and complex systems belong to that of foresight models. The basic architecture therefore remains constant across the different layers.

Megatrends and Explorations will be further discussed in the entry ► “Forecasting”.

Risk and Uncertainty

Surprises are basically of two different types. The first type is only a surprise because we use schemes for analysis that are too narrow; that is, they depend on how we frame the problem. By modifying the frame, one often discovers that in the end the surprise could have been foreseen, and, therefore, was not a real surprise. The expression “black swan” is used today to refer to an event that is virtually impossible in relation to a certain (temporal and spatial) context but becomes possible if transposed into a broader one (Taleb 2007). Although black swans in themselves are rare occurrences, today we see them in many different areas: climate, geopolitics, economics, technology, fashion, etc. All together they are numerous. If we then consider their reciprocal interactions, which result in cascading effects, we are almost forced to consider black swans as “normal” events.

Surprises can also be of a different type. Some surprises are independent of our analytical frameworks and concern situations that can in no way be anticipated: they are real surprises. They refer to rare events, with high impact, outside any radar. In this case, futurists speak of *wild cards*. I will use the term *risks* for the unforeseen events linked to our analyses (the first type of surprise described above) and *uncertainties* for real surprises (the second type).

Risk and uncertainty concern a further aspect of the difference between forecasting and foresight, which relates to process management.

My thesis is that there is a clear distinction between risk and uncertainty: the two terms refer to different classes of events between which there is normally no border that can be crossed. An uncertain event is not simply an event with a lower probability of occurrence; rather, it is an event for which there is no significant probability calculation. Some of the most striking errors

Foresight, Table 1 The layers composing Futures Studies

Layer 4	Complicated	Complex	Anticipatory
Layer 3	Risk	Uncertainty	Anticipation
Layer 2	Megatrend	Exploration	Anticipation
Layer 1	Forecasting	Foresight	Anticipation

committed during the recent economic crises have been due precisely to the inability to distinguish between risk and uncertainty. The real uncertainty of the future cannot be mistaken for risk, and no “siren call of probability,” as Derbyshire says, can alter this fact (Derbyshire 2017).

The vast majority of future events are uncertain, in the sense explained. Otherwise, only a small minority of future events are susceptible to probability assessments, just as only a small proportion of events are predictable.

The difference between risk (calculable) and uncertainty (incalculable) is not a new notion. Some classic sources are Knight, Keynes, and Shackle (Keynes 1921; Knight 1921; Shackle 1955). Keynes could not be clearer: with regard to uncertainty, he writes “there is no scientific basis on which to form any calculable probability whatever.” What can an analyst do when she/he cannot assign probabilities? One solution is to move from probability calculation to consequence assessment: the analyst seeks to reconstruct the overall picture and focuses on the effects that may occur rather than on the probabilities that cannot be known. Understanding the fragilities of a system and trying to overcome them is much more productive than trying to calculate the probability of an event that could damage that system.

Complicated and Complex

Complicated, complex, and anticipatory represent the third iteration of the difference among forecasting, foresight, and anticipation. As listed in Table 1, the two intermediate stages were megatrends, explorations, and anticipation and risk, uncertainty, and, again, anticipation. Each time the analysis goes deeper, the first term of the triads gathers the aspects most explicitly related to the scientific mainstream.

Each iteration comprises a crucial step. The one from forecasting to foresight (and then, analogously, from megatrend to exploration, from risk to uncertainty, and from complicated to complex) can be more or less adequate for the effort necessary. It is like throwing a ball up a hill: if the throw is not strong enough, the ball will come back and

not make it over the slope. Many attempts to go “beyond” forecasting, megatrends, risks, and complications fail precisely because the throw is not decisive enough (Poli 2019).

Moving from forecasting to foresight requires more than moving from one future to multiple ones. It is also necessary to verify that the generative mechanism of new futures is not limited to including repetitions of the past. Similarly, the transition from megatrends to explorations cannot be reduced to the difference between one and many. Instead, it requires the presence of genuinely open variables, which can yield very diverse outcomes. The shift from risks to uncertainties does not stop at the greater or lesser extent of the analytical frameworks; it implies the absence of a probability distribution. Each of these cases exemplifies the unyielding openness of the future (Tuomi 2019).

Complexity studies are perhaps the main development in contemporary science. They show that the traditional positivist perspective is an illusion to be definitively abandoned. In the case of complex systems, the best that we can do is “learn to dance with them” (Meadows 1999). Their dynamics must be followed, accompanied, and gently led in the direction that seems most appropriate, knowing that each intervention can generate – and usually does generate – unforeseen effects. For this reason, it is important to “feel” the system, to test the steps to be taken in constant interaction with it, moving gently and being ready to take a different action if necessary. In this perspective, the theory of anticipatory systems is the most sophisticated theoretical framework currently available to us. But, as often happens with new ideas, complexity has also been defined in many different ways, so much so that each research group seems to have developed its own distinctive meaning.

Futures Literacy (FL)

FL refers to the ability to use the future actively in the present (Miller 2007, 2011, 2018; Poli 2017).

First of all, however, we must bear in mind what is meant by “literacy.” At a first level, we

all know what it means: literacy means the basic skills that we all acquired during the years of compulsory schooling, namely, the grammar of our language, knowing how to read and write correctly, and being able to perform some elementary arithmetic operations. This definition is unquestionably correct but also exceedingly superficial. Literacy is in fact much more.

At a deeper level, the development of reading, writing, and counting skills, besides obviously having required the acquisition of certain technical abilities (such as the rules of grammar), is a fundamental source of freedom for millions of people. By knowing how to read and write, everyone is able to express an idea; to develop a point of view; to collect information; and to express and defend their dignity. To demonstrate this, a simple counterfactual suffices: today, a person who cannot read and write is socially marginalized.

There is no doubt that the skills that have characterized traditional forms of literacy remain essential today. The question, however, is whether they are sufficient to deal with the challenges of the twenty-first century. The complexity of this particular historical period seems to require the development of further skills which enable people to orient themselves within increasingly uncertain contexts characterized by incessant changes and marked by surprising technologies and novelties. The information of the past and the experience developed hitherto are no longer able to show the way. People need to broaden the information base on which they make decisions. But where can they go to find new directions? If the past is no longer enough, what remains is looking to the future. The future is precisely the source of the wider information base that people need.

As with traditional forms, new forms of literacy are also tools of freedom that enable people to orient themselves, develop opinions, take positions, and defend their dignity. Just as the former proved to be a socially important force when they became a mass phenomenon, the latter will also have a powerful impact on society if they become widespread. Minorities able to read and write have always existed, as have consultants for governments and large companies; the revolution occurred when the literacy process began to affect

the masses, and the same will happen for future skills.

Like former kinds of literacy, FL implies the acquisition of certain skills, i.e., those necessary to classify and use the future in an appropriate way. The main skills are the ability to distinguish among different types of futures and to identify different ways to use the future in the present. As regards the former, a standard distinction within futures studies is that among possible, plausible, probable, and preferable futures (Amara 1981):

- The scope of possible futures is the broadest and includes all the futures that we can imagine, even those that exceed the knowledge and the abilities that we have developed so far (i.e., warp speed or teleportation from *Star Trek*).
- Plausible futures are a subset of possible futures and include those that could actually occur according to the knowledge available to us.
- Probable futures constitute a further restriction; they refer to futures linked to trends that we are able to observe, including possible minor deviations.
- Finally, preferable futures are very different from those considered so far: while possible, plausible, and probable futures pertain to a descriptive level of analysis, preferable futures are clearly normative. It's about the futures we'd like to live in.

For example, consider the space program launched by US President John F. Kennedy in the early 1960s. When the project was presented, it was mere speculation, nothing but a possible future, because the knowledge required to send a person to the Moon was not yet available. During the 1960s, the necessary technology was developed and the future that once had only been imagined became first plausible, then probable, and finally, on 20 July 1969, real. The progression of this simple case shows that the classification of futures also depends on the time from which they are evaluated: the judgment inevitably changes as things evolve.

With regard to the different ways of using the future, however, I will expand Miller's distinction among optimization, preparation, and novelty:

- Optimization sees the future as separate from the present and selects a specific future of reference. Its motto is "I'm moving into the future." Analytically, the focus can be on the next phase (incremental innovation) or on the final result (planning).
- Preparation also perceives the future as separate from the present moment. Unlike optimization, however, preparation naturally takes into account a variety of different futures. Its motto is "the future is coming at me," from a direction that may or may not be detectable. As a result, attention can be directed in specific, selected, and visible directions or in vague, unclear, and indeterminate ones.
- Lastly, novelty sees the future directly in the present, which distinguishes it from optimization and preparation. From an analytical point of view, the attention can be more focused on ideas (concepts, values) or practices (behaviors, learning). The motto is "the future is already emerging in the folds of the present": by better understanding the present situation, digging into its depths, we can glimpse the future in formation.

While futures literacy is still in its early stages of development, it is clear that it can greatly increase the social ability to "see" the future – in the same way that reading and writing have increased people's capacity for citizenship.

Summing up, FL is part and parcel of FS. FL is the basic, non-technical version of FS, the competences that everybody should acquire. Under no circumstances is the intention to "know the future"; rather, it is a question of enabling people, organizations, and communities to make explicit choices among different possible futures (Miller 2018). The challenges to be faced in the coming decades will require citizens to be increasingly aware and able to make important decisions; in this sense, futures literacy

promises to be the basis necessary to arrive, perhaps, at shared choices.

Conclusion

This entry has sketched the different layers that make up FS, both horizontally and vertically. The initial division among forecasting, foresight, and anticipation (horizontal plans) was subsequently ramified by introducing analysis by megatrends and explorations, by risks and uncertainties, and by complicated and complex systems (vertical plans). This shows that futures studies constitute a sophisticated theoretical field that has the capacity to develop relationships with many scientific disciplines.

Cross-References

- [Anticipation](#)
- [Anticipation Systems](#)
- [Complexity](#)
- [Forecasting](#)
- [Futures Studies](#)
- [Risk](#)
- [Uncertainty](#)

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Frankenstein

Flora Lisica

Northeastern University London, London, UK

Abstract

Frankenstein; or, The Modern Prometheus is a novel by Mary Wollstonecraft Shelley (née Godwin; 1797–1851), published in 1818 and revised in 1831. It tells the story of Victor Frankenstein, who constructs and animates a sentient and sapient creature in a scientific experiment, only for the experiment to end in disaster as, rejected by Frankenstein, the creature revenges himself upon his creator.

Frankenstein is considered one of the earliest examples of science fiction, and, inspiring countless theatrical and cinematic adaptations, the scientist and his creature have evolved into cultural icons. As such they are important cultural metaphors and have been helping us think about questions partaking to our conceptions of humanity, and opening up new possibilities as to how we view our past, present, and future, for over two centuries.

This entry begins by explaining the background to *Frankenstein*'s composition, publication, and its cultural impact since, before outlining the novel's plot. It then focuses on some of the novel's central thematic preoccupations to do with the possibilities of human sympathy and science. These questions have been central in literary critical interpretations of Shelley's novel, as well as being integral to the importance of the story of *Frankenstein* as a cultural myth.

Keywords

Frankenstein · Mary Shelley · Possible · Science fiction · Literature

Introduction

The figures of the scientist and the sentient yet frighteningly destructive creature which he has brought to life are immensely familiar, even verging on the cliché. Since they were brought into existence in Mary Shelley's novel *Frankenstein; or, The Modern Prometheus*, published in 1818, they have been adapted for the theater, the cinema, and television, as well as directly or indirectly inspiring and appearing in other literary works, graphic novels, films, and television series. Indeed, some have argued that Shelley's narrative has had a stronger presence in popular media than any other over the past two hundred years (Cutchins & Perry, 2018, p. 1).

In popular culture, the characters of Frankenstein and his creature have sometimes appeared as the cartoonish mad scientist and his monster, but Shelley's novel ultimately continues to fascinate and frighten its readers by portraying both Frankenstein and his creature with great nuance and complexity. One of the earliest examples of science fiction (Mellor, 1988, p. 89), *Frankenstein* helped develop the genre's interest in the relationship between the possible and the impossible, specifically through its complication of our definition of the human, and our agency over this definition both through social organization and scientific advancement—questions which remain as pressing in our own time as they were at the time of Shelley's writing.

This entry explains the background to Shelley's composition and publication of *Frankenstein*, briefly indicates its reception, and provides a summary of the novel's plot. It then outlines some of the more prominent ways that *Frankenstein* has been approached by literary critics in recent decades, focusing, particularly, on readings of two central thematic preoccupations of the novel: Shelley's exploration of the possibilities of what might be understood as human, and the opportunities and dangers represented by scientific innovation. In these ways, *Frankenstein* continues to be important for our contemplation of what is, or could be, possible, both socially and scientifically.

Composition, Publication, and Reception

Shelley was the daughter of two important writers of fiction and political philosophy. Mary Wollstonecraft (1759–97) is celebrated for *A Vindication of the Rights of Woman* (1792); arguing for the improvement of women's access to education, it is considered an early work of feminism. William Godwin (1756–1836) is best remembered for *An Enquiry Concerning Political Justice* (1793), a critique of social institutions, where he offered a protoanarchist vision of human progress as dictated by reason. Shelley was strongly influenced by their work, as well as by the work of her partner (from 1814; husband from 1816) Percy Bysshe Shelley (1792–1822), a poet known for his radical political and social views (Smith, 2016a, pp. 2–3).

Shelley began working on *Frankenstein* when staying in Geneva in the summer of 1816, aged 18. She later traced her conception of the novel to an evening which she spent in the company of P. B. Shelley, the poet George Gordon Lord Byron (1788–1824), and writer and physician John William Polidori (1795–1821), when they decided to each write a “ghost story” to amuse one another (Shelley, 1992, p. 7). Shelley completed the novel in the spring of 1817, and, after being edited by P. B. Shelley, it was published anonymously on 1 January 1818, with a dedication to Godwin and a preface by P. B. Shelley (Seymour, 2000, pp. 189–195).

Frankenstein was not an immediate success, but it was translated into French in 1821, and adapted for the London stage for the first time in 1823, prompting Shelley to republish the novel with her name on the title page the same year. She produced a new edition of *Frankenstein* in 1831, making alterations to some of the language, characterization, and, occasionally, elements of the plot, as well as including a new preface (Robinson, 2016 19–21). The 1831 edition has been the most commonly republished, though some critics have argued for the superiority of the 1818 edition (Mellor, 1990). This entry chiefly refers to the 1831 edition, making occasional reference to the edition of 1818.

The 1823 stage adaptation of *Frankenstein* was a triumph and prompted a series of others; at least 96 adaptations have been documented to have been staged before 1990 (Forry, 1990, pp. 121–126). There have also been 41 silent films with *Frankenstein*-related themes, and at least 200 film titles which include the word “Frankenstein” are catalogued by the IMDB (Friedman & Kavey, 2016, pp. 93, 101). These adaptations stand at varying degrees of proximity to Shelley’s novel, many taking substantial liberties with both the story’s plot and Shelley’s characterization, but they have also been essential in establishing and maintaining *Frankenstein*’s cultural significance and have continued exploring the ideas introduced by Shelley’s novel.

Plot Summary

Shelley’s novel opens with Captain Robert Walton, an explorer sailing toward the Arctic, coming upon Victor Frankenstein by chance on his journey. Ill and weakened by the cold, Frankenstein is brought onto Walton’s ship and narrates the events which had brought him to the Arctic.

Frankenstein had grown up in Geneva together with his adopted sister Elizabeth Lavenza (she is portrayed as a cousin in the 1931 edition), and in the company of his friend Henry Clerval. He had gone on to pursue the study of the natural sciences at university in Ingolstadt, where he became obsessed with the desire to uncover the source of life in order to utilize it for human gain. He eventually constructs a humanoid creature from the parts of human and animal corpses and succeeds in animating it – only, he comes to see his experiment as a mistake the moment the creature displays signs of life. Eight feet tall and disturbingly unattractive, the creature is grotesque, terrifying, and Frankenstein believes that its physical properties are likely to be an indication of his malice. Racked with guilt, Frankenstein flees his workshop, leaving the creature to fend for himself.

Time passes, and Frankenstein hears of his younger brother William having been murdered in Geneva. Frankenstein believes that his creature must have been involved, but the family servant

Justine is accused of the murder instead, having been looking after William shortly before his death, and, in the absence of an alternative suspect, she is executed.

The remorseful Frankenstein is then confronted by his creature, who explains how, after his escape from Frankenstein’s workshop, he found himself treated with violence and contempt by people who are all, like his creator, horrified by his appearance. The creature retreated from civilization and found shelter in an abandoned hovel attached to a cottage. The family inhabiting it was unaware of the creature’s presence, but as he observed their daily lives, he grew extremely fond of them, performing small tasks of kindness for them without their knowledge. He learnt to speak from overhearing the family members converse with each other and taught himself to read from books he discovered in the forest. But while he began befriending the blind father of the family, the rest of them reacted to the creature’s presence with great hostility, and he fled from the cottage.

Enraged and miserable, the creature traveled to Frankenstein’s family estate, where he murdered William and framed Justine. Seeing no prospects of being integrated into society, the creature is acutely lonely, and furious with Frankenstein. The creature demands that Frankenstein create a female companion for him, promising that the two of them would make sure to stay away from Frankenstein and the rest of humankind, and threatens to destroy Frankenstein’s life if he does not comply.

Frankenstein reluctantly agrees and begins working on the female creature with great unease. He is especially troubled by the possibility of the two creatures reproducing, and, having witnessed the effects of his creature’s anger, he worries that he may be creating a race which will terrorize and obliterate humankind. Frankenstein eventually destroys the female body he had assembled before bestowing it with life, and the creature retaliates by killing not Frankenstein but his loved ones, first murdering Clerval, and strangling Elizabeth on her and Frankenstein’s wedding night. Frankenstein then begins pursuing the creature, in hope of destroying him once and for all, which eventually brings him to the North Pole.

Frankenstein dies shortly after recounting his story to Walton, and Walton's expedition is brought to a halt as his ship encounters difficulties, and his crew demands that they return south. Upon Frankenstein's death, the creature comes to Walton's ship to mourn his creator and, feeling entirely alone in the universe and remorseful of his actions, vows to commit suicide (Shelley, 1992, 1998).

Critical Interpretations

While Shelley's work was a strong presence in popular culture of the nineteenth and twentieth centuries, it did not receive a great deal of attention from literary critics before the 1970s, when it rose to prominence as feminist revisions of literary history and the literary canon resulted in the reassessment of works by female writers. Since then, *Frankenstein* has been a seminal text in the broadening of the literary canon to include more works written by women, and for the testing of the possibilities offered by feminist approaches to literature more broadly. Indeed, Long Hoeveler argues that *Frankenstein* has "figured more importantly in the development of feminist literary theory than perhaps any other novel" (Long Hoeveler, 2003, p. 45).

A number of feminist readings have taken Shelley's biography as a starting point to think about *Frankenstein* in light of Shelley's gender and the possibilities available to female writers. Some readings of *Frankenstein* have focused on the relationship between Frankenstein's creation of the creature and maternity, particularly in light of Shelley's pregnancies and childbirth in the period of writing (Moers, 1976, pp. 92–99; Mulvey-Roberts, 2000). Others have explored Shelley's relationship to Godwin, Wollstonecraft, P. B. Shelley, and their literary outputs (Knoepfmacher, 1974), or the novel as a reflection on female authorship in the context of the male-dominated literary history and culture of Shelley's time (Gilbert & Gubar, 1979, pp. 213–247; Johnson, 1982).

These readings have remained influential for critics considering *Frankenstein* in more recent

decades, who have often focused on situating the novel in its historical contexts. The questions critics have been asking about the novel's engagement with the possibilities and limitations of humanity, and how that definition of humanity might be expanded or limited by the promises of scientific advancement, are ones which remain relevant for *Frankenstein's* readers at large, as well.

Frankenstein and the Idea of the Human

Central to *Frankenstein* is the question of the possibilities and limits of what could be considered human. When the reader first encounters the creature, recounting his history to Frankenstein, he is eloquent, thoughtful, and reflective; Frankenstein himself observes that he is "rational" and "a creature of fine sensations" (Shelley, 1992, pp. 209, 141). Nonetheless, inspiring fear and disgust with his appearance, he is shunned from society, and Frankenstein and the rest of mankind find it impossible to recognize him as a fellow human.

A number of critics have read Shelley's inquiry into the possibilities of what might be deemed human as a metaphor for the different social groups facing similar kinds of rejection as the creature. In that vein, critics have read Shelley's portrayal of the creature as a comment on race relations in Europe at the time of her writing. The creature himself expresses sympathy with non-Europeans on two occasions, lamenting the fate of the original inhabitants of America, and the treatment of a Muslim immigrant in France (Shelley, 1992, pp. 116, 119). Mellor argues that the creature's appearance evokes early-nineteenth-century conceptions of what was believed to be the Mongolian race (2001), for instance. Others have regarded Shelley's description of the creature's appearance as drawing upon European perceptions of Africans and West Indians in the period, with the novel thus emerging as a critique of European imperialism. While the Slave Trade Act of 1807 prohibited the slave trade in the British Empire, it did not end the practice, and Shelley was clearly invested in the issue, reading works on the slave trade, and partaking in a sugar boycott because it came from

West Indian plantations which employed slave labor (Seymour, 2000, pp. 138–139). Thus, Malchow sees the novel as engaging with the “fears and hopes” of the abolitionist movement (Malchow, 1996, p. 9), and Mulvey-Roberts reads the creature’s journey as evoking both slave narratives and the history of slave uprisings (Mulvey-Roberts, 2016, pp. 52–91), while Young has perceived the reception of Shelley’s novel in the United States, and the emergence of Frankenstein and his creature as cultural symbols over the last two centuries as specifically racially charged (Young, 2008).

Frankenstein has also been read as invested in questions of class and economic difference, especially as a reading of the events of the French Revolution (1789–1799). Although Shelley does not give an exact date for her novel’s setting, the events have been commonly assumed to be taking place in the decade preceding the Revolution (Goodall & Knellwolf, 2008, p. 4). Frankenstein attends the University of Ingolstadt, which was in the period associated with the Illuminati, a group united by its members’ interest in radical science and the supernatural, as well as by their support of the Jacobin cause. Indeed, an affinity was perceived between scientific exploration and political radicalism in the period more broadly. In 1791, the laboratory of scientist Joseph Priestly (1733–1804) was burnt down by an anti-Jacobin mob in protest of his revolutionary sympathies (Smith, 2016b, pp. 74–75), while some writers applied metaphors of animation to the spirit of the French Revolution in order to argue both for its power to enliven the social body, and for its destructive potential (Ruston, 2005, p. 2). Some critics thus read Shelley’s characterization of the relationship between Frankenstein and his creature in light of the metaphorical use of monstrosity in discussions surrounding the French Revolution. Critics of the French Revolution, such as Augustin Barruel (1741–1820) and Edmund Burke (1729–1797), analogized Jacobins with monstrous children revolting against their benevolent parent, embodied by the king. But the metaphor was also adopted and turned on its head by pro-Revolutionary writers including Godwin, Wollstonecraft, and Thomas Paine (1737–1809).

They argued that the monstrosity of a child can be traced back to the monstrosity of their parents, and so the monstrosity of the Terror was a retaliation to the ill-treatment of the people under the *Ancien Régime*, with its unjust systems of wealth, rank, and privilege (Sterrenburg, 1979, pp. 154–157; Baldick, 1987, pp. 16–25).

The creature explains that he was initially “benevolent,” motivated by “the love of virtue, the feelings of happiness and affection” (Shelley, 1992, pp. 87, 97, 213). He ascribes his destructiveness to the unanimous rejection by all those whose sympathy and affection he had sought: “I am malicious because I am miserable; am I not shunned and hated by all mankind?” (Shelley, 1992, p. 140) he contends. Before commencing his tale, the creature places his hands over Frankenstein’s eyes, so that Frankenstein might hear the creature’s story uninfluenced by his disgust at the latter’s appearance, but Frankenstein refuses, pushing away the creature’s hands (Shelley, 1992, p. 98). After hearing the creature’s story, Frankenstein finds himself conflicted: “I compassionated him and sometimes felt a wish to console him, but when I looked upon him, when I saw the filthy mass that moved and talked, my heart sickened and my feelings were altered to those of horror and hatred,” and Frankenstein concludes that he “could not sympathise with [the creature]” after all (p. 142). Theatrical and cinematic adaptations of *Frankenstein* have tended to exploit the visual nature of their respective mediums and have, ever since the 1823 production, typically portrayed the creature as mute, while going to great lengths to affect viewers with his grotesque appearance (Friedman & Kavey, 2016, pp. 81, 104). The novel, contrastingly, as some critics have shown, gives the creature the opportunity to be heard by its readers who, like the blind father of the cottagers, are not affronted by the creature’s appearance, and tend to be sympathetic. Thus, Marshall argues that *Frankenstein* enquires into the logic of sympathy by focusing on the difference between sight and language (Marshall, D., 1988, pp. 178–228), while McLarren Caldwell reads the novel as a critique of the idea of sympathy as based on resemblance and identification, instead inviting the reader to

sympathy which accounts for and accommodates difference (McLarren Caldwell, 2004, pp. 25–45). In these ways, *Frankenstein* continues to speak to our contemporary interest in questions partaking to empathy and perspective-taking and helps broaden the possibilities of who and what we might think of as deserving of sympathy.

***Frankenstein* and the Possibilities and Ethics of Science**

Frankenstein also displays an overt interest in the possibilities and perils involved in scientific research and technological invention. It has often been read as a warning about the potential dangers of science, where the promise of discovery can lead researchers to disregard ethical realities (Mellor, 1988, p. 114); Friedman and Kavey observe that *Frankenstein* is “the most influential cautionary tale ever written” (Friedman & Kavey, 2016, p. 15). Thus, *Frankenstein* and his creature have been used as shorthand for ethically questionable scientific experimentation and technological advancement and are frequently invoked in discussions surrounding industrialization, mechanization, cloning, robots, genetically modified agriculture, and genetic engineering more broadly, among others (Clayton, pp. 84–86; Goodall and Knellwolf, p. 1; Friedman & Kavey, 2016, pp. 64–65). *Frankenstein*’s parting words to Walton give support to such readings: “seek happiness in tranquillity, and avoid ambition, even if it be only the apparently innocent one of distinguishing yourself in science and discoveries” (Shelley, 1992, p. 210). This interpretation has also been given prominence in many of the novel’s adaptations, beginning with the play of 1823, which, entitled *Presumption; or, the Fate of Frankenstein*, presented the story as a tale of the dangers of hubristic pride and ambition which uncovers the disjunction between the scientifically possible and ethically permissible (Forry, 1990, pp. 135–160).

In this vein, Mellor sees Shelley as condemning research which goes beyond describing the natural world and attempts to change it (Mellor, 1988, p. 89), and a number of critics have traced the ways in which the scientific attitudes represented in *Frankenstein* can be read as a

critique of exploitative and ethically questionable scientific practices of Shelley’s time. Marshall has observed how the process of *Frankenstein*’s education about human anatomy in “vaults and charnel houses,” and his assembling of the creature’s body from parts found in “the dissecting room and the slaughter-house” (Shelley, 1992, pp. 50, 53), reflects the ethically contentious use of human corpses by medical professionals in the period, for example. While only bodies of executed criminals were permitted to be used for medical dissection according to the Murder Act of 1752, the high demand for bodies to be used for medical purposes resulted in grave-robbing and an illegal trade in corpses, until the passing of the Anatomy Act in 1832, which gave medical professionals the right to dissect donated bodies (Marshall, T., 1995, pp. 20–23).

Similarly, early-nineteenth-century experiments with electricity were met with distrust by some. Shelley implies that *Frankenstein* employs electricity in order to animate his creature; he becomes fascinated by the phenomenon as he sees an oak tree hit by lightning in a storm (Shelley, 1992, p. 40). In the 1818 edition, this episode is followed by *Frankenstein*’s father constructing an “electrical machine” to conduct experiments, and flying a kite in the storm in a manner which invokes the famous experiment of the same kind conducted by Benjamin Franklin (1705–1790) (Shelley, 1998, p. 23). Researchers including Franklin had been exploring ways of channeling the electric current, and its potential for human use, over the course of the eighteenth century, but the phenomena and its possible applications were by the early 1800s not yet fully understood. In her 1831 introduction to *Frankenstein*, Shelley recalled being inspired by conversations about early experiments in electricity, some of which gained controversy at the turn of the century. The practice of connecting animal corpses to the electric current, named “galvanism” after its originator Luigi Galvani (1737–1798), in order to observe the corpses’ movement due to muscle contractions, became notorious after one of Galvani’s followers made a public demonstration of the experiment by employing the body of a recently executed murderer (Goodall and Knellwolf, p. 7).

Although modern-day research is much more invested in the autonomy of each individual over their own body, the questions about the relationship between the technically possible and ethically desirable raised by *Frankenstein* remain relevant. Helman takes the novel's story as an important metaphor for thinking about the human body in medicine and society more broadly today (Helman, 1992), for example. The novel has also inspired readings which focus on the human interference into the natural environment (Morton, 2016), as well as questions partaking to artificial intelligence and the posthuman (Clayton, 2003; Mousley, 2016).

But a number of critics have also contemplated the significance of the novel's subtitle, "*The Modern Prometheus*," which suggests a more ambivalent attitude toward science. Shelley here draws a parallel between Frankenstein and Prometheus, who according to Ovid created the first human by mixing together earth, water, and air. In doing so, however, Prometheus disrupts the fragile equilibrium of the newly shaped cosmos, where order had only recently been imposed upon the primordial chaos by the elements' separation; the humanity he creates is, like Frankenstein's creature, an embodiment and source of chaos and disorder (Liveley, 2018, pp. 26–27). According to both Ovid and Aeschylus, Prometheus disobeys the gods even further by presenting humanity with fire, and by implication with civilization (Priestman, 2018, pp. 44–45); the link between the gift of fire and electricity was made by Shelley's contemporaries, with Franklin being called "the Prometheus of modern times" due to his experiments (Priestman, 2018, pp. 44–45). Prometheus, like Frankenstein, is severely punished for his disobedience – he is chained to a rock in the Caucasus, with his liver being eaten by an eagle, only to grow back again overnight so that his punishment can continue for eternity. But significantly, Prometheus was regarded as a heroic figure by many of Shelley's contemporaries, including Godwin, P. B. Shelley, and Byron, emerging as a symbol of creativity and noble revolt against an arbitrary authority and constraint (Barnett, 2018, p. 85).

Similarly, Frankenstein's experiment suggests some of the genuine sense of excitement prompted by contemporary scientific discoveries. "Perhaps a corpse would be re-animated; galvanism had given token of such things" Shelley writes in her introduction (Shelley, 1992, p. 8), and Goodall and Knellwolf emphasize that the misgivings about science in the novel are qualified by the context of scientific innovation as an overwhelmingly powerful force of good and social improvement at the time of Shelley's writing (Goodall & Knellwolf, 2008, p. 2). And indeed, Frankenstein's experiment has encouraged scientific discovery as well as caution: Dr. Jean Rosenbaum, who invented a pacemaker in the 1950s, took his inspiration from the use of electricity for the creature's animation in the 1931 *Frankenstein* film (Friedman & Kavey, 2016, pp. 67–68). Thus, Shelley's *Frankenstein* testifies to the importance of fiction, and perhaps science fiction especially, as not only warning readers against the dangers of an unrestrained imagination, but also opening up trajectories of what might be considered possible, and the subsequent possibility of the imagined becoming actualized as a force for good.

Summary

Frankenstein is a novel with an immense cultural presence, generated both by Shelley's text itself and its countless cinematic and theatrical interpretations. The story of Frankenstein's creation and animation of a creature who turns against him and causes his destruction has become a cultural myth, our interest in it perpetuated by our continual interest in the limits of the possible. Shelley's novel has generated a number of critical interpretations, which speak to the richly multifaceted nature of Shelley's novel. *Frankenstein* has for the last two centuries carried out the important work of aiding us in our engagement with uncertainties partaking to our sense of our own humanity in light of our understanding of our past and present, and our aspirations and fears partaking to our vision of the future.

Cross-References

- [Feminisms](#)
- [Fiction](#)
- [Invention](#)
- [Perspective-Taking](#)

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Future Problem Solving

Connie Phelps

Emporia State University, Emporia, KS, USA

Abstract

Future Problem Solving (FPS) engages students in futuristic thinking through annual academic competitions at local, state, regional, and international levels. Hosted through Future Problem Solving Program International (FPSPI), its mission *develops the ability of young people globally to design and achieve positive futures through problem solving using critical and creative thinking*. Founded by E. Paul Torrance in 1974, the education program uses a six-step Problem Solving Model based on the Osborne-Parnes Creative Problem Solving Model. E. Paul Torrance promoted positive futures through the construct of creative problem solving. Organized geographically as local FPSPI affiliates, participants select one of four competition components that include Global Issues Problem Solving, Community Problem Solving, Scenario Writing, and Scenario Performance. Students prepare annual topics throughout the school year with qualifying competitions leading to the next level. At the end of the school year, a four-day International Conference (IC) hosts

champions during a culminating competition organized as Junior (grades 4–6), Middle (grades 7–9), and Senior (grades 10–12) divisions. Participants address a Future Scene as a hypothetical situation set 20–30 years in the future such as Antibiotic Resistance (2022) and Neurotechnology (2021), and participants receive constructive feedback from trained evaluators. The Global Issues Problem Solving (GIPS) component challenges participants to design positive futures, apply the six-step Problem Solving Model, and create a detailed Action Plan. Possible futures emerge as participants (1) Identify Challenges, (2) Select an Underlying Problem, (3) Produce Solution Ideas, (4) Generate and Select Criteria, (5) Apply Criteria, and (6) Develop an Action Plan.

Keywords

FPSPI · E. Paul Torrance · Creativity · Creative problem solving · Futuristic thinking · Giftedness

Identifying Challenges

As creativity evolved from a unitary to factorial conception in the twentieth century (Guilford 1950), psychologists and educators increasingly integrated definitions, models, and processes of creative productivity into P-12 school environments to develop giftedness, talent, and creativity. For example, the 1971 *Education of the Gifted and Talented – Volume I: Report to Congress* known as the Marland Report responded to the 1970 Congressional Public Law 91-230, Section 806 mandate for a status report on education of the gifted and talented in American schools. The United States Commissioner of Education Sidney P. Marland conducted the study that comprised a review of research, analysis and development of data bases, public hearings, studies of representative programs, and review and analysis of American educational delivery systems for the gifted and talented. The Marland Report concluded specialized services for the

gifted and talented make a difference and outlined 10 major initiatives.

Of significance to the founding of Future Problem Solving (FPS), the Marland Report (1971) defined children with high performance capacity through six categories that included “creative or productive thinking.” This landmark report advocated for the development of intellectual and creative abilities that would otherwise languish, especially for children and adolescents from underserved populations. The Marland Report recognized the need for evidence-based professional development on creative productivity. Guilford developed convergent and divergent tests to measure nonintellective abilities, and adaptations of these tests measured creativity in children and adolescents. When Torrance, Getzel, Jackson, and others reported differences between highly intelligent and creative populations, the resulting debate stimulated research studies on creativity measurement. Terminology shifted from creativity used as a global concept to labeling that accurately distinguished creativity and divergent thinking (pp. 35–36). Compelling evidence from studies on fluency, flexibility, and originality tests showed significant gains in divergent thinking. School interventions emphasizing creative behavior and problem solving benefitted students with giftedness (pp. 73–74). By underscoring possibilities in Gifted Education, the Marland Report set the stage for creative or productive thinking with specialized school programs such as FPS in the 1970s and sustained advocacy efforts in the 1980s. The process of exploring possible paths in creative productivity research yielded solutions with the capacity to transform the possible selves of gifted students as they encountered creative educational interventions designed to enhance their possible futures.

Underlying Problems

Ten years after the release of the Marland Report, experts in the field of Gifted Education identified 15 prevalent issues known as the “1982 Myths” that emerged during a turbulent decade in American society and education (Treffinger 2009).

A special study published in the *Gifted Child Quarterly* 1982 winter issue aimed to demythologize misconceptions; stimulate discussion, critical thinking, and creative research; and establish direction for productive inquiry and practice. Examples of these myths conceptualized the gifted as a single, homogenous population; creativity as a construct too difficult to measure; the sufficiency of one educational program for all students; and Gifted Education considered synonymous with a program (pp. 229–230). This groundbreaking article accompanied societal shifts that occurred during the 1980s “Me Generation” decade. Accordingly, advocacy efforts in Gifted Education transitioned from program development to inclusion of underserved populations, identification bias, the achievement gap, twice-exceptionality, and social and emotional needs. National educational priorities targeted science, technology, engineering, and mathematics (STEM) and rigor in core academic subject curricula and instruction. Possibilities for excellence flourished with twenty-first Century Skills considered the “new basics,” Jacob K. Javits Act funding, and emphases on differentiation, individualization, and learning styles (pp. 230–231).

Produce Solution Ideas

Sandwiched in the Zeitgeist between the Marland Report and 1982 Myths milestones in Gifted Education, E. Paul Torrance (1915–2003) founded Future Problem Solving in 1974 to address complex real-world issues during academic competitions for students in grades 4 through 12. Torrance grew up on a 700-acre family sharecropper farm that grew cotton, peanuts, and fruit trees in rural Georgia (Hébert et al. 2002). Though a precocious youngster, Torrance lacked physical strength and aptitude for the chores and responsibilities expected of him to support the family farm. During his primary school years, however, Torrance established himself as an avid reader and imaginative writer. During middle school, Torrance gained support from teachers who recognized his academic abilities, and he received awards in

writing contests. A turning point occurred when his father acknowledged his son's incapacity as a farmer and accepted Torrance's need for a college education. After graduating from high school, Torrance entered Georgia Military College where he worked in the college library, gained respect from his teachers, and enjoyed French studies (pp. 12–14). Despite his family's poverty, economics of the Great Depression, and world events preceding World War II, Torrance attained academic distinction during junior college preparation with possibilities that suited his future as a teacher.

In 1937, Torrance taught French, Latin, algebra, and history at Midway Vocational High School near his hometown and took education courses through correspondence studies (Hébert et al. 2002). After graduating from Mercer University in 1940 with honors and a BA in English and minors in history and education, he pursued counseling psychology at the University of Minnesota and graduated in 1944 with an MS in educational psychology. He taught at Georgia Military College where he developed their counseling guidance program until 1944, when he took full-time employment counseling disabled veterans at the University of Minnesota and began PhD studies. When drafted into the US Army in 1945, his physical disabilities prevented active combat. However, he worked as a psychiatric social worker and psychologist using the Rorschach Inkblot, Bender Gestalt, and Army Individual Intelligence tests. In 1946, Torrance accepted a position at Kansas State College in the Counseling Bureau for Veteran's Administration and a subsequent appointment as Dean of Men. Torrance acquired professional development skills in psychodrama and sociodrama with Jacob Moreno at Kansas State College who encouraged Torrance to pursue doctoral studies. After completing his PhD at the University of Michigan in 1951, Torrance researched characteristics on jet aces during the Korean War in his position as the Director of Survival Research in the US Air Force Training Program. His earlier experiences teaching difficult students in Georgia, counseling disabled veterans, and research studies on jet ace fighter pilots converged conceptually

with shared characteristics of “wild colts” who survived using productive creativity with varying degrees of success. Torrance identified creative skills and risk-taking as essential elements of productive behaviors and extraordinary accomplishments (pp. 14–17). He published results on survival and stress responses to emergent conditions and developed a “survival” definition of creativity as “whenever one is faced with a problem for which he has no practiced or learned solution, some degree of creativity is needed” (p. 17). Torrance viewed possibilities of human potential through the lens of creativity and survival research.

Generate and Select Criteria

Concurrent with Torrance's development as an educational psychologist specializing in creativity research during the 1950s, Alex F. Osborn (1888–1966) applied groundbreaking creativity techniques developed through his leadership in the award-winning Batten, Barton, Durstine, and Osborn (BBDO) advertising agency headquartered in New York City with branch offices around the world. In 1953, Osborn developed the brainstorming technique to generate high-quality ideas of going for quantity, withholding criticism, welcoming wild ideas, and combining and improving ideas steps. Osborn found it “easier to tone down a wild ideas than it is to think up a new one” (CEF 2014, p. 2), and brainstorming comprised part of his seven-step Creative Problem Solving framework published in *Applied Imagination* (Osborn 1953). The CPS seven-step model included the following: (1) Orientation: Pointing up the problem; (2) Preparation: Gathering pertinent data; (3) Analysis: Breaking down the relevant material; (4) Hypothesis: Piling up alternatives by way of ideas; (5) Incubation: Letting up to invite illumination; (6) Synthesis: Putting the pieces together; and (7) Verification: Judging the resultant ideas. During the next decade, Osborn consolidated the seven stages into fact-finding, idea-finding, and solution-finding stages in CPS Version 1.1 (Firestien 2017). To disseminate best practices and the

advances in creativity studies, Osborn established the Creative Education Foundation (CEF) in 1954, and the Creative Problem Solving Institute in 1955, both housed at Buffalo State College in the State University of New York. In 1966, Osborn collaborated with educator Sidney Parnes (1922–2013) on the five-stage Osborn-Parnes CPS approach to enhance student capacity to apply personal creativity through all aspects of their lives. As Osborn's successor, Parnes founded the International Center for Studies in Creativity in 1967 to teach, develop, and research creativity studies. The CEF founded the *Journal of Creative Behavior* in 1967 to publish original and innovative research, theory, and application studies. The Center for Applied Imagination ([n.d.](#)) at Buffalo State College offers Graduate Certificate and Master of Science degree credential programs in Creative Studies for educators, trainers, and consultants with virtual and on-campus options with Buffalo State College, Netherlands, and China locations. As a man of great vision and imagination, Osborn generated and selected cutting edge criteria from the advertising world to enlarge possibilities in the field of higher education.

Apply Criteria

The Future Problem Solving program emerged just 2 years after Marland introduced his study on gifted and talented to the 92nd Congress. Although individual states adopted variations of the Marland definition of giftedness, recommendations remained unfunded until the Jacob K. Javits and Talented Students Education Act of 2001. This meant inconsistent, if any, identification of gifted and talented children and adolescents, particularly among underserved populations. Specialized teacher training programs, in-service preparation for teachers and support staff, and pilot programs lacked funding earmarked for Gifted Education. In 1966, Torrance returned to Georgia with his wife Pansy where he served as Professor and Chair of the Department of Educational Psychology, Research, and Measurement at the University of Georgia until his retirement in 1984. During his

tenure at the University of Georgia, he developed the *Torrance Tests of Creativity* (TTCT) (Torrance 1966), founded Future Problem Solving (1974), developed the Incubation Model of Teaching (Torrance and Sisk 1997), and established the Torrance Center for Creative Studies in 1984. Despite the increase in creativity research, Torrance perceived a decline of creativity in American schools and society (Hébert et al. 2002). When a local high school asked him to work with gifted students, he field-tested an idea inspired by the Osborn-Parnes CPS approach combined with futuristic thinking. After experiencing the first Future Problem Solving Bowl in Athens, Georgia, enthusiastic participants requested more activities. Torrance and his graduate students planned a second competition with other school participating throughout Georgia. In 1976, the renamed Future Problem Solving Program (FPSP) offered practice activities in October, November, and February with a scenario writing contest in January. Elementary, middle, and high school students competed in April and received merit certificates of excellence. Former graduate students established FPS programs in their new locations after graduation and sanctioned programs included 29 states and the Australia-New Zealand FPS by 1988 (pp. 30–31). Applying the Osborn-Parnes CPS approach to real-world problems set in the future made creative productivity possible in academic programs as a nationally recognized interscholastic competition.

Develop an Action Plan

As Future Problem Solving Programs established state and national affiliates, the nonprofit Future Problem Solving Program International (FPSPI) organization, headquartered in Melbourne, Florida, provided oversight with International Office staff, Board of Trustees, and Board of Advisors. FPSPI maintains the mission and objectives, components, and processes of the Future Problem Solving Programs. The mission statement *develops the ability of young people globally to design and achieve positive futures through*

problem solving using critical and creative thinking, as articulates Torrance's combined focus on CPS and futuristic thinking. FPS transforms the possible selves of participants by operationalizing the six-step model to research possible pasts and imagine possible futures. Eight goals reflect his teaching experiences with diverse secondary students, counseling disabled veterans, developing assessment instruments, and researching jet ace pilots during his productive career. FPS goals provide students opportunities to increase global awareness and interest to impact their future; explore and problem solve complex, societal issues; develop, utilize, and improve research techniques; learn and apply problem-solving strategies; expand and enhance creative and critical thinking skills; engage in real-life problem solving; develop teamwork skills; and improve oral and written communication. Torrance adapted the five-step Osborn-Parnes CPS approach as a

student-friendly six-step FPS model: (1) Identify challenges in the Future Scene; (2) Determine the underlying problem; (3) Produce solution ideas to the underlying problem; (4) Generate and select criteria to evaluate solution ideas; (5) Evaluate solution ideas and determine the better action plan; and (6) Develop an action plan. The Four Cs form the cornerstone of the FPS process: creativity, critical thinking, communication, and collaboration. Collectively, the six-step model helps students develop critical and creative thinking, problem-solving, and decision-making skills.

Early Future Problem Solving Programs applied academic skills across the curriculum, complex thinking skills, and socio-emotional development for individual and team competitions supported by training and social events for students, coaches, and parents (Hébert et al. 2002). Annual FPS components offered students variety and choice based on their interests, skills, and resources. The original

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Future Problem Solving, Fig. 1 International Conference Coach and Students, Turkey Affiliate



Future Problem Solving, Fig. 2 International Conference Coach and Team Members

FPS component, Team Problem Solving, challenged local participants to collaboratively research two Practice Problems, apply the six-step FPS to an imagined Future Scene as a Qualifying Problem, and compete in an Affiliate Bowl/Final Problem. Champions from the Affiliate Bowl advanced as competitors at the International Conference. FPS now offers four competitive components that include Global Issues Problem Solving (formerly Team Problem Solving), Community Problem Solving, Scenario Writing, and Scenario Performance. Affiliates may compete as teams or individuals in Global Issues Problem Solving and Community Problem Solving components whereas Scenario Writing and Scenario Performance participants compete as individuals (see Figs. 1, 2, 3, and 4). Global Issues, Scenario Writing, and Scenario Performance components feature annual topics that participants research from business and economics, social and political, and science and technology strands. In Community Problem Solving, students identify and develop topics at local, state, national, or global levels in civic and cultural issues,

education, environment, health concerns, and human service as an area of concern. Affiliate teams and individuals compete in junior (grades 4–6), middle (grades 7–9), and senior (10–12) divisions, and Global Issues includes an adult team division. Students help select annual FPS topics submitting ideas and voting on future topics. Topics in Northern Hemisphere affiliates update on July 1, and Southern Hemisphere topics update on January 1 to coincide with their respective academic school calendar years (FPSPI n.d.). International Conference Antibiotic Resistance (2022) and Neurotechnology (2021) topics challenged competitors to explore possible futures in the four competitive components (see Table 1).

Future Problem Solving Programs include noncompetitive curricular components with Action-Based Problem Solving, Problem Solving Experience Curriculum, and Problem Solving Across the Curriculum materials. Younger students may work independently in small groups or with teacher guidance with Action-Based Problem Solving integrated as hands-on authentic

Future Problem Solving,**Fig. 3** International
Conference Variety Show

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learning activities in regular classroom curriculum. The Problem Solving Experience Curriculum provides comprehensive curriculum at the primary level and up through grade nine as a semester course or over one to four academic years with cross-curricular possibilities. Problem Solving Across the Curriculum provides 20 years of previous Future Scenes from the Global Issues Problem Solving component for younger or older students to practice and apply the FPS process and write Future Scenes. FPS Academy Virtual Lessons support asynchronous online lessons for current annual topics. FPSPI provides curricular resources to support knowledge and skills in each component and offers virtual learning support for collaborative team work on annual topics through a partnership with the interactive Renzulli Learning management system. FPSPI aligns component curricula with state and national education standards (FPSPI n.d.). FPS academic competition and noncompetitive possibilities flourished

during the decades since Torrance conceived a futuristic solution to infuse creative productivity in schools and societies.

Possibilities for the Future

Glăveanu (2018) described the human capacity to transform past and future realities by living within the possible as an adaptation to continuously changing physical and social environments. Torrance compared future possibilities to satori awakenings as creative minds adapted to future realities (1979). Studies in possibilities require looking for solutions with the expectation of finding good results. As participants complete FPS steps, they develop critical thinking, creative problem solving, collaboration, and communication skills to create positive futures. Seemingly disconnected events, people, and concepts curiously offer possibilities as life events connect with productive



Future Problem Solving, Fig. 4 Grand Champion Bulldog Patrol Poster, Flagler Palm Coast High School, Florida

results (see Fig. 5). Torrance valued future studies as seriously as studying possible pasts to cope with unforeseen challenges, imagine possibilities, and gain new skills (Torrance 1974). He believed talking about possible futures began with everyday problems and included the possibility of solutions for complex problems. Viewing his young son physically unsuited for rural farm life, Torrance's father envisioned a promising academic future for E. Paul Torrance. Similarly, his schoolteachers nurtured his intellectual potential by offering him writing competitions and encouraging postsecondary education. Despite his inability to serve in army combat, Torrance found a niche aligned with his natural abilities and aptitudes counseling disabled veterans and administering psychological tests. As he gained new skills, Torrance advanced his professional capacity as an educator and psychologist. He foresaw possibilities as a creativity researcher that required doctoral studies, and he worked to attain

his PhD, despite limited financial resources. He perceived creativity in "wild colt" students and risk-taking jet aces as they successfully negotiated difficult or dangerous environments. Torrance countered his adverse circumstances when he imagined possible opportunities using creative problem solving and futuristic thinking.

After Torrance returned to his home state of Georgia at age 51, he accomplished his most significant life work in creativity research (see Fig. 6). Working with high school gifted students provided the catalyst to combine CPS and futuristic thinking in rigorous academic experiences to advance creative productivity. As FPS programs spread throughout the United States and 14 countries, more than a quarter million students benefited from the knowledge, skills, and dispositions gained during academic competitions. Researchers provided evidence on the effectiveness of FPS Programs to accomplish its mission by designing and achieving positive

Future Problem Solving, Table 1 International competition topics 1974–2022

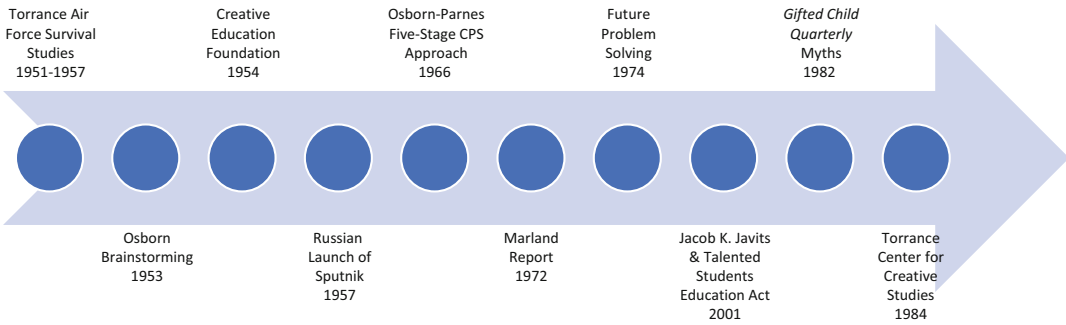
Academic Year	Practice problem 1	Practice problem 2	Qualifying problem	Affiliate bowl	International conference
1973–1974	Rejecting authority	Attacks on automation	Rehabilitating criminals	Rejection of competition	Immunization against Disease
1974–1975 ^a	Knowledge explosion	Mental stress	–	–	–
1975–1976 ^a	Changing gender roles	Job mobility	–	–	–
1976–1977 ^a	The cooling of the Earth	Jobs for all	–	–	–
1977–1978	No fight! No competition!	Future water shortages	World hunger	Many ways of doing things	Computers in an Information Society
1978–1979	Underwater colonization	Space colonization	An older population	Invention and high technology	–
1979–1980	Transportation	Space travel	Ocean farming	Hypnosis and psychic energy	Alternative Energy Sources
1980–1981	Solar energy	Transportation	Home computers	Hunger and malnutrition	Increasing Longevity
1981–1982	Child abuse	Extrnormal mental powers	Drug use	Endangered wildlife	Space Colonization
1982–1983	UFOs	Ocean communities	Robotics	Pet overpopulation	Computers
1983–1984	Electronic games	Prisons	Lasers	Nuclear waste	Genetic Engineering
1984–1985	Drunk driving	Nuclear war	Education	The greenhouse effect	Industrialization of Space
1985–1986	Endangered species	Feeding the world	Artificial intelligence	American legal system	Organ Transplants
1986–1987	Garbage	Changing family structures	Water	Illiteracy	The Impact of the Media
1987–1988	Space travel	The elderly	Acid rain	Immigration	Birth Defects
1988–1989	Energy sources	Youth and the law	Nutrition	Employment	Terrorism
1989–1990	Shrinking tropical forests	The arms race	Poverty	Medical advances	Crime
1990–1991	High school dropouts	Ozone depletion	Transportation	Censorship	Corruption in Government
1991–1992	Space exploration	Legal epidemic	Sports ethics	Land use	Advertising
1992–1993	Stress on students	Hunger	Oceans	Drugs	Nuclear Waste
1993–1994	Robotics	Antarctica	Extinction of animals	Space law	Control of Disease
1994–1995	Cities	Homelessness	Kids and violence	Prejudice	Privacy
1995–1996	Firearms	Mental health	Twenty-first-century marketplace	Cybernetics	United Nations
1996–1997	Homes of the future	Extraterrestrial life	Cashless society	Competition	Increasing Life Span
1997–1998	Natural disasters	Freedom	Women in the workplace	Nontraditional families	Medical Ethics
1998–1999	Under the sea	Computer error	Education: Lifelong learning	Prison alternatives	Distribution of Wealth

(continued)

Future Problem Solving, Table 1 (continued)

Academic Year	Practice problem 1	Practice problem 2	Qualifying problem	Affiliate bowl	International conference
1999–2000	Fads	Financial security	Amateur sports	The Internet	Genetic Engineering
2000–2001	Tourism	World population	Water	Habitats	Global Interdependence
2001–2002	Alternative energy	Education options	Organ donations	Environmental law	Virtual Corporations
2002–2003	Sports medicine	E-Commerce	Nanotechnology	DNA identification	Worldwide Communication
2003–2004	Smart clothes	Rage and bullying	Artificial Intelligence	Media impact	Immigration
2004–2005	Entertainment	Terrorism/ security	Agriculture of the twenty-first century	Depletion of oceanic species	Business Crime
2005–2006	Climate change/ climate threat	Freedom of speech	Nutrition	Healthcare access	Redistribution of Wealth
2006–2007	Fundraising/ charity giving	Protection of national treasures	Cultural prejudice	Caring for our elders	Privacy
2007–2008	Body enhancement	Simulation technology	Neurotechnology	Debt in developing countries	Child Labor
2008–2009	Olympic games	Cyber conflict	Space junk	Counterfeit economy	Pandemic
2009–2010	Sensory overload	Invasive species	Orphaned children	Food distribution	Green Living
2010–2011	Healthy living	Air transport	Genetic testing	Water quality	Emergency Planning
2011–2012	All in a day's work	Coral reefs	Human rights	Trade barriers	Pharmaceuticals
2012–2013	Culture of celebrity	Robotic age	Megacities	Ocean soup	Global Status of Women
2013–2014	Social isolation	Desertification	Surveillance society	Land transportation	Space
2014–2015	The impact of social media	Processed foods	Propaganda	Enhancing human potential	Intellectual Property
2015–2016	Treatment of animals	Disappearing languages	Recovering from disaster	The global workplace	Energy of the Future
2016–2017	Educational disparities	It is all in the genes	3D printing	Identity theft	Biosecurity
2017–2018	Spread of infectious disease	Toxic materials	Philanthrocapitalism	Cloud storage	Criminal Justice Systems
2018–2019	Mission to Moon, Mars, and beyond	Drones	Food loss and waste	Coping with stress	De-Extinction
2019–2020	International travel	Sleep patterns	Gamification	Living in poverty	Terraforming
2020–2021	Youth in competitive sports	Wearable technology	Human environmental impact	Personalized medicine	Neurotechnology
2021–2022	Water supply	Building green	Insects	Mining	Antibiotic Resistance

^aIncomplete topic information



Future Problem Solving, Fig. 5 Possible Pasts Connecting Possible Futures While Transforming Possible Selves (1951–1984)



Future Problem Solving, Fig. 6 Distinguished Professor Emeritus E. Paul Torrance receives University of Georgia Bicentennial Medal (1985).

futures for its participants who practice critical and creative thinking skills. FPS participants transform their possible selves into futuristic and divergent thinkers who collaborate with team members as effective problem solvers and analytical researchers. FPS participants gain expertise as innovators, ethical leaders, and global citizens (FPSIP n.d.) as they remember

the past and envision positive future realities. Annual future topics, the six-step problem solving model, and competition component outcomes equip participants to “live within the possible” (Glăveanu 2018, p. 519) as they creatively transform into their possible selves during academic events at local, state, regional, and international levels.

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Future Selves

Rocco Scolozzi

Department of Sociology and Social Research,
University of Trento, Trento, Italy

Department of Civil, Environmental and
Mechanical Engineering, University of Trento,
Trento, Italy

Skopia S.R.L. Anticipation Services, Trento, Italy

Abstract

The concept of “future selves” merges two terms, the “future” and the “self,” each brings a wide range of meanings, and together they offer further meaning and a focus for applied scientific fields such as cognitive sciences, social psychology, and futures studies.

The self is the object of the self-perception, the metacognitive skill that allows the person to consider themselves. The self is conceived by the individual as well as is influenced by social interactions and involved in the sociocultural processes of identity building, in which a “dialogical self” takes position in the “society of selves.”

The future is “what is going to happen” according to the Merriam-Webster dictionary, but much more from the perspective of futures studies. The future is the domain of predictions, hopes, plans, fear, and anxiety, a domain of possibilities, as opposed to past and present realities. The future is the necessary reference for any description of a social entity and a dimension of human existence.

The “future selves” are representations of oneself in the future, recently regarded as the foundation of human action in terms of anticipatory behavior or explicit foresight.

This entry starts with the definitions of future selves in a variety of fields, mentioning some recent applications. Then, it focuses on the relation between future selves and the

future consciousness. The conclusions present some reflections on the role of future selves in the development of the capacities of individuals and communities, in the context of future literacy.

Keywords

Anticipation · Agency · Future consciousness · Temporally extended self · Futures literacy · Possibility thinking

Research on Future Selves

The term “future selves” can be considered an evolution of the concept of “possible selves,” presented as conceptions of ourselves in future states, in relation between motivation and social cognition (Markus and Nurius 1986). The conceptions of our selves are related to what we want to be or fear to be and work as a mediating link between motivation, guiding our behavior, and our social and cultural understanding of the world around us (Dunkel and Kerpelman 2006). Erikson argues that possible selves include an experience of what it would be like to be in the future state in question; thus, possible selves, as a theoretical construct, should be seen more distinctly as a part of the self and not in isolation as just a representation of the future (Erikson 2007).

Future selves can be understood as possible alternative evolutions of a “temporally extended self” (TES), and their variety and quality affect self-esteem and play a role in determining motivation and behaviors in pursuing a goal. Understanding the way how people envision and view their future selves matters for predicting their effect. Unlike the past, people anticipate *becoming* whatever they forecast for the future. This underpins the importance of how one envisions their future: Their conclusions may affect self-regulation and behavior in a myriad of ways. The psychological time distance from a future self has been shown to affect current identity, motivation, and goal-directed behavior. Our future selves can deflate or flatter us, motivating or demotivating to achieve hoped-for selves (Peetz and Wilson 2008).

This resonates with Rosen's concept of anticipatory system (Rosen 2012): "a natural system that contains an internal predictive model of itself and of its environment, which allows it to change state at an instant in accord with the model's predictions pertaining to a later instant." This theory provided the conceptual foundation for foresight studies (Louie 2010).

Many researchers investigated how future self-predictions influence on personality, motivation, and agency (Hoyle and Sherrill 2006; Lazaridis and Bauer 2013; Leondari et al. 1998; Oettingen and Mayer 2002). Positive possible selves may be an enabler of depression-coping skills, while negative possible selves are associated with depression and anxiety (Mathews et al. 2020; Penland et al. 2000). The self-recognition has a role in preschoolers' performance on tasks requiring memory, attention, inhibition, and planning; the self becomes the ultimate executer of behavior (Ross 2008). Lazaridis and Bauer provided an interesting study exploring when children develop a temporally extended self and about which factors contribute to its development, revealing that the caregiver conversational style was the only factor that contributes to the children's metarepresentational ability in the understanding of their TES (Lazaridis and Bauer 2013). TES seems emerging in reciprocal social interactions and affective engagement (Zocchi et al. 2018), supporting a conception of the self as a dialogic entity related to alterity (Hermans 2019; Zahavi 2015). Such a dialogical entity includes a variety of selves, with "internal and external positions," and implies that society is not merely the environment of the self but its complex and multi-dimensional element (Hermans 2019).

The self-identity relies on a self-narrative that provides a sense of continuity with the past, and based on this past, it also projects out into the future, providing an anticipated trajectory for the person into the future; connecting the past, present, and future gives coherence and meaning to a person's life. Without this sense of continuity, there is no future (Damasio 1999). The future consciousness as a multifaceted capacity is considered the most critical ability needed for the survival and growth of humanity and the

flourishing of the individual (Lombardo 2009). Thomas Lombardo has published several books and articles on this topic and considered future consciousness as "the total integrative set of psychological abilities, processes, and experiences humans use in understanding and dealing with the future" (Lombardo 2006). We could say that self-identity and future consciousness are connected through future selves.

The complementary (or oppositional) drivers toward stability, security, and certainty versus growth, risk, and adventure are essential to future consciousness and make it highly adaptive, especially in a world of rapid change. People can be reactive or proactive about their actions. Proactive approaches are tied to the internal locus of control, so they depend on individual qualities such as self-efficacy and perceived competence upon which future selves are conceived. Reactive approaches, which often entail fear or anxiety, put control in the world and rarely allow for an internal clear representation of future selves.

Interesting reflections concern the relationships between the future selves and the others. The decisions people make for future selves and other people are similar to each other and different from their decisions for present selves (Pronin et al. 2008). Le Morvan (2009) argues that selfishness and altruism can be interpersonal and intrapersonal, suggesting interesting frames in economic and psychological studies. Interpersonal altruism and selfishness imply diverging effects of actions on different interests; in other words, when the interest of others diverges from one's own, acting altruistically involves acting to promote the interest of others at cost to one's own interest, whereas acting selfishly involves acting to promote one's own interest at cost to that of others. The intrapersonal altruism and selfishness rely on a temporal distance between present selves and future selves; where there is a divergence between the self's interest at the present and its interest in the future, the self can act to promote its present interest at cost to its future interest (intrapersonal selfishness) or its future interest at cost to its present interest (intrapersonal altruism). Le Morvan offers thought-provoking examples such as the Eager Eater and the Meagre Eater, the

Procrastinator and the Early Bird, the Sun-Bather and the Sun-Avoider, and The Exercise-Avoider and the Exerciser; the former of each couple take actions to satisfy their interests in the present at the cost of their interests in the future (Le Morvan 2009).

The Future Selves and the Possible

The negative and positive future selves, the intelligibility of future selves, are related to the definitions of ► **adjacent possible**, as “*the set of possibilities available to individuals*” (in Björneborn 2020), in which new possibilities may be limited or developed, according to the constraints of the agents or of their environments and their capacities and affordances. This notion can be associated to the notion of ► **potential**, as “something that can develop or become actual,” which has acquired a fundamental role in the realm of creativity studies (Runco, Lubart, etc. in Corazza 2020). In such an interpretation, the individual or collective creativity expands the possible with innovation and novelty in both convergent, goal-directed, ways, and in divergent, exploratory and serendipitous, ways (see ► **“Divergent Thinking”**). Here it is interesting to note that increasing the temporal breadth considered in the future thinking facilitates the creative thinking (Chiu 2012). On the other hand, a ► **creative mindset** implies opening oneself to apparently illogical but generative considerations, such as contemplating an event both impossible and possible at the same time, instead of simply labeling reality with the binary category impossible or possible (Karwowski 2020).

Creative abilities and qualities are valued in the field of education, underpinning the concept of ► **possibility thinking** (Lin 2020) associated to the “transformation from what is to what might be, in everyday contexts for children and teachers” (Craft et al. 2013; Craft and Chappell 2016). According to Craft and her colleagues, the skill in possibility thinking involves self-determination and intentional action, being imaginative, and collaboration. In turn, the self-determination and intentional action are resumed

in the concept of *self-direction*, which means “making [one’s] own decisions and managing one’s own work” (Cambridge Dictionary) and depends on self-competence and self-esteem. In general terms, living within worlds of possibility and intentionally developing possible selves is the ontological condition of human beings, a question deeply explored in psychology.

Possibility thinking is associated to “future thinking” that refers to the imagination of possible future events or one’s ability to creatively imagine the limitless possibilities of hypothetical future scenarios (Chiu 2012). The orientation to the possible (or to the future) simultaneously refers to person-related and contextual properties and relies on three major psychological processes, motivation, planning, and evaluation. In such an orientation, individuals move into the past through the use of memory and imagine the future, developing their own mental representation of the future; such ability is defined as “future time perspective” (Husman and Shell 2008). Causal attributions and expectations concerning the future play an important role in this evaluation. When adolescents explore future opportunities, set goals, and realize them, they simultaneously develop their own identity (Nurmi 1991), and their future time perspective has a role in career decision-making (Walker and Tracey 2012). Besides, the development of future orientation depends upon the socialization (Trommsdorff 1983). From an anthropological perspective, the future is a dimension of human existence, where some reference to the future is necessary to the description of any social entity, “where there is no future there is no social organization either” (Sande 1972).

Developing Future Selves in a Common Ground: From Future Consciousness to Future Literacy

The future is the domain of predictions, hopes, plans, fear, and anxiety, a domain of possibilities, as opposed to the past and present possibilities, for individuals as well for groups and communities. Throughout history, the future has almost always

been considered in forecasts by “experts,” in the modern age especially in the field of economics and military studies; according to Øystein Sande, the today task of futurology is to democratize the future and make it a political subject for people and communities (Sande 1972). The Polak’s concept of future as a driving force (Polak 1973) stimulated a variety of reflections on the nature and historical development of the human capacity to think about the future.

According to Lombardo, bringing future consciousness into education and popular culture becomes a critical challenge especially for our times, “The more complex the world becomes, the more we need future consciousness to evolve” (Lombardo 2006, pp. 61–67). Constructively heightening future consciousness implies the development of important human virtues and skills, such as understanding the big picture of the future, self-responsibility, courage, optimism, and transcendence or the capacity to identify with something of great value or importance beyond oneself (Lombardo 2009, 2016). Summarizing all these, future consciousness itself is considered a virtue, the main feature of wisdom, and even a dimension of human excellence that contribute to authentic long-term happiness, as defined by Seligman, in opposition to the short-term superficial happiness (Seligman 2002).

Recently, future consciousness is interpreted as a “shared capacity” and as “awareness of the future potential of the present moment,” limited by cognitive, psychological, and systemic issues. Sharpe and Hodgson identified three modes of anticipatory awareness, short-term “managerial,” midterm “entrepreneurial,” and long-term “visionary,” that represent foundational forms of future consciousness (Sharpe and Hodgson 2017); in their Three Horizons method, future consciousness can be thought through the explicit use of all three perspectives (Sharpe et al. 2016).

Ahvenharju and colleagues, through literature review, have gathered a variety of future consciousness characterizations, arriving to define five dimensions of futures consciousness: time perspective, agency beliefs, openness to alternatives, systems perception, and concern for others (Ahvenharju et al. 2018). Their model addresses

the relevant question about what an entity needs to do to have in order to have a high level of futures consciousness. The entity in question may be an individual, a group, an organization, a nation state, or perhaps, humanity overall.

It is worth to note that future selves are linked to all the five dimensions. “Time perspective” is about understanding the concept of passing time, which is the basic prerequisite for being conscious about the future; interestingly, the authors use “time perspective” rather than “future perspective,” to put on together all three aspects of time: past, present, and future. Bearing in mind this dimension, a person can distinguish a variety of future selves over time, enabling her time perspective (see the concept of “temporally extended self”) with different ability according to the length of timing extension; thus, the variety of future selves could be poor and compressed within a short period (for example, a few months) or rich and extended in possibilities (for example, over a decade).

The “agency beliefs,” which is the sense of being able to influence how the future will unfold, is the dimension associated with the abovementioned psychological topics such as self-direction, motivation, and self-esteem. In this dimension, future selves could be “ineffective” or “effective” along a gradient of agency, distinguishing the different attitudes toward the future into five categories defined by Godet: passive, reactive, preactive, proactive, and anticipative (Godet 2006).

The “openness to alternatives” combines creativity, imagination, and critical thinking in the “capability of embracing and appreciating change, seeing the value of alternative ways, and questioning established truths” (Ahvenharju et al. 2018). Considering this dimension, future selves could be closed or open to their potential with their own originality, or they could simply conform to mainstreaming definitions of the possible future (likely the most probable and repetitive one).

The “systems perception” entails a systemic and holistic thinking underpinning an open systems approach with open anticipatory assumptions rather than viewing systems as closed,

deterministic, and controllable. Miller and colleagues assert that the former is more appropriate for taking into account human agency and emergent novelty: A person focused only on partial systems would be less able to understand the complex and long-term consequences of her decisions (Miller 2019). This implies future selves are regarded as part interacting and interdependent with a variety of systems, and they could vary from being subject at the mercy of linear processes to being agent within complex interactions and consciously “dancing with systems” (Meadows 2008).

The “concerns of others” implies the values, morals, and ethical thinking associated with the desirability of possible futures or of what a person wants to see realized in the future. Groves argues that our responsibilities toward future people are of urgent importance in a period of increasing number of intrinsically unknowable technologically produced risks; the individual responsibility toward the others and the future people follows the human beings as primarily relational rather than individualistic (Groves 2009, 2017). In this dimension, future selves could range from inspiring and enacting that responsibility to pursuing an individualistic desirability.

In brief, the Ahvenharju and colleagues’ model of future consciousness consists of three actor-centered dimensions (time perspective, agency beliefs, and openness to alternatives) and combines them with two dimensions that focus on the larger societal level (systemic perception, concern for others); all these dimensions underpin the variety of future selves as well as depict the processes to enrich the development of future selves.

A recent study has shown that these dimensions can be improved by future-oriented education (Chen and Hsu 2020). Anyhow, future consciousness is present in everyday anticipatory behavior (see ► [“Anticipation”](#)) and explicit ► [foresight](#), underpinning the effort to build images of possible, probable, and preferable futures and paths to such futures. Such ability to imagine and influence tomorrow is a foundation of futures literacy.

According to Riel Miller (UNESCO Chair in Futures literacy), this is the “capability, the skill

that allows people to better understand the role of the future in what they see and do. Being futures literate empowers the imagination, enhances our ability to prepare, recover and invent as changes occur” (Miller 2019). The futures literacy is considered as an “essential competency for the twenty-first century,” and it is stimulating a growing worldwide community, the Global Futures Literacy Network, including futures researchers, practitioners, and supporters, spanning across the globe, in academic and government institutions, as well as businesses and NGOs (UNESCO 2020).

From this community, an increasing number of experiences and reflections is emerging, especially related to education and teaching. Häggström and Schmidt situate futures literacy in a multifaceted pedagogy (Häggström and Schmidt 2021), in which the future selves can be imagined by the child while acting as an agent of change and feeling kinship with other human beings as well as with the other-than-humans. Pouru-Mikkola and Wilenius structure parallels between futures education and futures literacy theories and propose a conceptual model for “transformative futures learning” that contains the key components that construct futures capacity in an individual: cognitive, motivational, and active dimensions of using the future (Pouru-Mikkola and Wilenius 2021).

Summary

Future selves are an important part of our individual identity, a temporal extension necessary to motivate our actions and give meaning to our life and our plans, but despite all this they are not merely private. As we are relational beings, future representations of ourselves are also relational entities that influence and are influenced by others.

The future selves can be “locked up”, compressed into a short time horizon, lacking in creative abilities, self-centered, at the mercy of processes perceived as deterministic, or “freed,” varying in vast temporal horizons, and confident of being able to influence future conditions but at the same time open to alternatives and in empathic

connection with others. Considering how we define our future selves is meaningful to us and to our communities; cultivating freed future selves requires a capacity for metacognition, thinking about how we think, how we define ourselves, and what drives our decisions, all skills that can be learned throughout life.

Future selves should be at the focus of future consciousness and futures literacy in order to bridge the personal futures and the global/collective futures; mentioning Lombardo, through the enhancement of future consciousness we facilitate the development of more ethical human beings (Lombardo 2009). Remembering Bell's teachings (Bell 1998), as people learn to search for possible futures (including future selves) more fully, to forecast probable futures more accurately, and to make judgments of preferable futures (and future selves) more ethically, they can become more responsible actors, i.e., active, purposeful, and innovative beings whose future-oriented behavior helps create not only their own future but also the social order itself.

Cross-References

- Adjacent Possible
- Creative Mindsets
- Dialogical Self Theory
- Divergent Thinking
- Possible in Education
- Possibility Thinking
- Potential

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Futures Studies

Victor Vahidi Motti

Alternative Planetary Futures Institute (ApFi),
Washington, DC, USA

Keywords

Futures Studies · Foresight · Big Space · Big Time · World Futures Studies Federation (WFSF) · Sustainable Development Goals (SDG) · Alternative Planetary Futures

Definition

Futures studies is an art and a science with a strong emphasis on imagination and creativity in creating different possible futures. Its main purpose is to discover and master the complex chains of cause and effect through conceptualization, systemic approach, and feedback loops, ultimately providing innovation in the social and technological fields. There is a great and important distinction between Globalization and Planetization. Political spaces can benefit a great deal if some doubt is cast on the agenda of globalization and put in its place the idea of “planetization,” a planetary consciousness or identity.

Introduction

When discussing or introducing the art and science of futures studies or if integrated with planning, strategic foresight, it is generally assumed that foresight experts intend to predict the likely future based on existing trends and evidence. But in high quality futures studies, in addition to the probable future, the desired or normative future, plausible, and possible futures are also considered (Gidley 2017). For example, how historical and current conditions can contain a consistent chain or story of potential events and surprises, and therefore, in addition to recognizing the connections with historical structures, they also seek to discover discontinuities and put an emphasis on

the importance of human agency; i.e., crossing transforming structures and challenging them. In fact, in the realm of possible futures, reference to specialized science-fiction literature in addition to popular movies is also prominent (Lombardo 2018).

One should note that there is an ongoing crisis of identity in the specialized English-speaking futures studies literature about what word or expression is more appropriate to describe the field and the profession (Sardar 2010). Although there is not yet a comprehensive agreement in the English-speaking world, there are compelling opposing arguments against the use of certain terms. The suffix – ology often is used to describe scientific disciplines such as psychology, geology, cosmology, etc., where the researcher deals with real data and fact. But futurology cannot be meaningful in this sense because of the uncertainty, or uncertainty about the future. There are only images about the possible futures and there is no fact that the researcher wants to know and thus become futurologist. The future in this respect is the realm of imagination. It is not merely processing current facts and extrapolating trends.

Conceptualization and Innovation

Professional futures studies include intellectual and practical activity that covers all key areas of life including psychology, social, economic, environment, politics, and technology. Its main purpose is to discover and master the complex chains of cause and effect through conceptualization, systemic approach, and feedback loops, ultimately providing innovation in the social and technological fields. Its scale must also be a combination of attention to planetary consciousness and national and local issues.

It is necessary to have a multidimensional perception of and reciprocity among economic, political, and human developments. Cutting edge science and advanced technologies are pushing exponential and rapid progress. On the other hand, the planetary human society because of unwise leadership in many countries is engaged in all kinds of conflicts. Because of the cultural

lag – and more importantly legal lag, the society at large cannot keep up with the technological developments and tsunami of change, and therefore communities have been caught in the whirlpool of crises.

The birth place and the well-funded programs on futures studies are often associated with the national security strategic studies centers or think tanks, which are close to the defense, intelligence, and armed forces organizations because such studies provide useful insights for identifying long-term or strategic threats (Motti 2017). But more recently in the corporate world as well as the public sector, the board of directors are also shifting the focus and agenda of their strategic planning and research and development departments to the application, implementation, and institutionalization of the science and art of organizational futures research also known as corporate foresight (Rohrbeck and Kum 2018), using professional scanning and monitoring systems to identify weak and strong signals, trends, driving forces of change, and even potential black swans or wild card events. They often deal with the systemic consequences to better make sense of transformation or collapse. It is worthwhile to note, however, that there is yet another strand of futures studies that provides a balance against the dominance of the top-down government or corporate foresight by the enlightened leaders through a more bottom-up sustainable way, which is called open participatory foresight to set policy goals and long-term strategies. The Citizen and Multi-Actor Consultation on Horizon 2020, CIMULACT Project, is among the best practices of such approaches (Rosa et al. 2021).

Futures studies is an art and a science with a strong emphasis on imagination and creativity in creating different possible futures. Major researchers are more inclined to produce text, graphs, tables, and questionnaires because of their tendency toward more positivist views and quantitative analysis, but closer communication with ordinary people and extensive educational and promotional efforts is vital because the general public generally think that futures studies is the same as accurate prediction or even worse see it as related to the power of divination.

Shedding light on the macro model of the history is a crucial mental skill too. If society has gone through stages of growth and maturity in addition to seeing news, events, and happenings, it should also sense the big picture and the trajectory of mega trends. Better identification and understanding of trends is, of course, the first step, and in the higher stages of growth and maturity, society goes through events and trends and reaches key underlying patterns of change (Halal 2021).

Big Time and Big Space

The main difference between professional futurists and analysts who try to predict or forecast the prices in the stock market is the focus on big time and big space. As for the time, one of the ambiguities is always whether it means the next month, after the next elections, or like the 20-year horizon official vision documents, or even more than 30 years later. Professional futurists emphasize that the longer the time horizon, the more relevant the future research, open participatory foresight, and co-creation with good design will be. It can be noted that in 30-year time, more novel things are possible compared to when you define your horizon for another year or the next business quarter, especially if your goal is to build a desirable future. Another important issue is to identify subsequent historical periods, eras, ages, and epochs with a diversity of theories that rely on structure, agency, or the combination of both.

In addition to the big time, one must pay attention to big space or planetary scale. Today, unfortunately, many officials and governmental planning activities have a closed and limited attitude in terms of political imagination and action. Perhaps a governor's office, when planning for the future, considers itself separate from the rest of country. Or a country sees itself as independent of the future of the surrounding region. Leading futurists practically intend to consider the big space in terms of complex and intertwined layers of planetary, regional, national, local, and organizational scales in an integrated and coherent way.

The Best Practices

The World Futures Studies Federation (WFSF), as an international scientific and nongovernmental association, is one of the leading institutions that accepts not only pluralism but also promotes the importance of big time and big space. The Federation was founded in 1973 in Paris. In other words, the history of modern futures studies spans only 50 years. The WFSF acts like an umbrella organization to embrace all the leading figures of futures studies based on the value of pluralism. WFSF also has a very close relationship with UNESCO and the program of enhancing Futures Literacy as a fundamental quality or capability to challenge the current dominant imagination about the possible futures and how to embrace and to live with complexity, novelty, and uncertainty (Miller 2018).

On the planetary scale, the issue of sustainable development is the focus of international institutions today, especially the United Nations Economic and Social Council, so much so that the set of UN Sustainable Development Goals (SDG), which include 17 ideals or possible goals, has practically become the future agenda of the better planet (Nelson 2021). Experts and activists worldwide are constantly evaluating and monitoring the indicators for measuring planetary development (Glenn and Florescu 2017).

The setting of SDGs and the associated evaluation and monitoring are admirable and necessary steps toward increasing our collective awareness about planetary conditions. The setting of goals and targets and the monitoring of indicators are all very much necessary. But mostly informed by a positivist, objective analysis of the external world, this approach often downplays the importance of measuring and monitoring the inner world transformations of each individual, shifting of worldviews, and evolution of modern mythologies.

A Different Globalization

There is a great and important distinction between Globalization and Planetization. Political spaces can benefit a great deal if some doubt is cast on the

agenda of profit- and power-driven globalization and put in its place the idea of “planetization,” a planetary consciousness or identity, and the associated goals and targets that are necessary to make a radical change in the inner world of individuals, meaning that no one will be forgotten or left behind.

The SDGs will be achieved by humans who cannot follow heartless algorithms or cold and dry instructions. The framework of a possible planetary future should integrate analytical thinking with motivational feelings. It serves to transform the inner world of individuals, as well as the world out there, by helping them to question and update their mythologies, theologies, and the underlying worldviews and values (Motti 2019).

We, therefore, need evaluation and monitoring of three key programs:

1. Culture of Hope Through Planetary Consciousness
2. Planetary Benefits and Risks of Technological Revolutions, and
3. Integral Development of Scientific Worldview in Art and Literature

There are seven valleys in a value-focused transformation of consciousness for a possible world characterized with planetary wisdom:

- 1/Question all and any natural born identities
e.g., tied to geography, ethnicity, nationality, faith, language, etc.
- 2/Love the aliens' cultures and hybrid mindsets
e.g., those of foreigners' on this planet or even extraterrestrials with the least common shared overlapping believes, norms, and practices.
- 3/Embrace the planetary identity to save the ecology
e.g., by refusing the geopolitical boundaries, to tackle climate change, loss of biodiversity, depletion of natural resources, etc.
- 4/Refuse all and any justification of violence and killing
e.g., avoid to praise warfare in texts and movies and stories and stop glorification of fighters and warriors, etc.

5/Practice the key principles of scientific worldview

e.g., obtain a mythical sense of awe and reverence in learning laws of nature governing the cosmos and practicing a global ethics that is inclusive of non-humans.

6/Realize the no-human-work economy and all activist society

e.g., support automation of undignified hard and boring labor and encourage everyday activity of political participation.

7/Transcend the simple vs. complex binary through enriching our symbolic systems

e.g., create new higher level frames or languages to enrich the big picture understanding and more simple elegant generalization of the lower level confusing complexity.

Summary

Imagination of the possible worlds might be largely facilitated if guided by the growing literature and best practices provided in the futures studies field. Although government and corporate initiated vision building and foresight exercises are playing an increasingly important role, more attention should be given to the open participatory foresight and enhancing the futures literacy. Use of the future for the purpose of achieving planetary consciousness was demonstrated by providing an outline of a different possible world through which the dominant elements of globalization are questioned.

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Genetic Engineering

Elena L. Grigorenko
University of Houston & Baylor College of
Medicine, Houston, TX, USA

Abstract

This entry provides an overview of genetic engineering, which is the deliberate modification of the characteristics of a living organism by manipulating its genome. It briefly introduces some relevant terminology and presents the history and the current status of the related field of scientific inquiry. The entry concludes with a discussion of the selected ethical issues that are currently debated both by the scientific community and by the public.

Keywords

Genetic/genome editing · Genetic/genome engineering · Genetic/genome manipulation

Introduction

Since the second half of the last century, there has been a continuous effort to develop cost-efficient and reliable approaches to precisely alter the genome of living cells (Kozovska et al. 2021). The foreseeable benefits of these approaches are difficult to overestimate as they range from public health (e.g., eliminating or editing genes

responsible for specific genetic disorders) to agriculture (e.g., manipulating specific features of plants and animals to enhance their yield for human needs).

Different metaphors have been used to describe these approaches (Baylis 2019). As the human genome is often referred to as the “book of life,” the metaphor of editing is used to visualize the act of finding, cutting, replacing, and pasting parts of the genetic code. As one of the renowned scientists in the field, Jennifer Doudna puts it, extending the editing metaphor, the genome can be as “malleable as a piece of literary prose at the mercy of the editor’s red pen” (Doudna and Sternberg 2017, p. 90). Another oft used metaphor is that of engineering, which stresses the design and construction facets of this process. Yet other metaphors utilized both in scientific and popular literature are that of genetic/genomic hacking, surgery, and modification. All these terms, in general, are used interchangeably. In this entry, the term “genetic engineering” is used, which, in David Bodine’s words (<https://www.genome.gov/genetics-glossary/Genetic-Engineering>), means that pieces of DNA are isolated, combined with other pieces of DNA, and then propagated in any number of various organisms. In more technical terms, genetic engineering techniques refer to a family of biotechnologies, where DNA sequences are changed by deletion, mRNA processing, and posttranscriptional modifications to cause altered gene expression, which, in turn, results in modified proteins, and, eventually, phenotypic

changes. These techniques use nucleases or molecular scissors to intentionally introduce alterations into the genomes of living organisms (Rogers and Pfuderer 1968). These biotechnologies are unified by three basic steps, namely: (1) entry into the cell and, ultimately, the nucleus; (2) alteration of gene transcription and downstream processing function; and (3) suppressed, overexpressed, or quantitatively modified protein product (Khan 2019).

Genetic engineering first emerged in the early 1960s with the development of recombinant DNA (rDNA) technology (Szybalska and Szybalski 1962) and has rapidly progressed with the appearance of various biotechnological tools such as viral vectors (Gaj et al. 2013). The scope of the related research and practice is vast: since the end of the last century, more than 1900 clinical trials utilizing various gene engineering approaches have been carried out (Tamura and Toda 2020). These approaches rely on randomly inserted specific DNA sequences into the host genome using conventional genetic engineering tools. The beginning of this century has been marked by the rapid development of novel tools that induce genome modifications not randomly, but in a targeted manner at specific sites. Among these tools are zinc-finger nucleases (ZFNs), transcription activator-like effector nucleases (TALENs), and the recently established “clustered regularly interspaced palindromic repeats”/CRISPR-associated 9 (CRISPR/Cas9) technologies (Gaj et al. 2013). These genome editing tools are now recognized as appropriate, efficient, and effective for intentional genetic engineering; thorough and rapid research with these tools has led to the development of novel treatments for a broad spectrum of various maladies, from genetic diseases and cancers to organ failures. This entry provides a brief history of the field, selectively illustrates relevant approaches, and touches on the related ethical concerns.

History of Genetic Engineering

The history of genome engineering is extensive and demonstrates a consistent and ongoing drive

for progress (Capecchi 2005; Urnov et al. 2010). The initial proof of concept of virus-mediated gene transfer (Rogers and Pfuderer 1968) demonstrated that foreign genetic material could be transferred into cells by viruses. This work was followed up by the first human gene therapy experiment, where Shope papilloma virus was transduced into two patients with genetic arginase deficiency (Rogers et al. 1973). The therapy did not lead to improvement in the patients, and the experiment generated concerns about the risks and rewards of gene therapy. As a result of public discussion, ethical standards for the clinical application of gene therapy have been proposed (Friedmann and Roblin 1972). Yet, there were instances of unethical applications of genetic engineering (Johnson 1980), which, in turn, led to the appearance of the report of the US President’s Commission, in which a distinction was drawn between somatic and germline genome editing in humans as well as between medical treatment and nonmedical enhancement (President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research 1982). With regard to the former distinction, the report stressed the importance of recognizing that the insertion of an altered gene into a germ (sperm or egg) cell triggers changes not only in the treated individual, but also in their future offspring. Changes made to somatic cells are not heritable, meaning that they are not passed on to future generations. With regard to the latter distinction, the report pointed out that genetic alterations of typical (i.e., not disordered) people are charged with the danger of “perfecting” human beings. One more important distinction differentiates the *in vivo* and *ex vivo* strategies utilized in genetic engineering. In the *in vivo* strategy, genetic vectors are directly delivered into the patients, and genetic modification occurs *in situ*. In the *ex vivo* strategy, the cells are altered *in vitro* and then are delivered back to the patient.

The 1980s were marked by the utilization of primarily nonviral methods for gene delivery (e.g., microinjection and calcium-phosphate precipitation). Although these methods exhibited some advantages over the viral ones (e.g.,

large-scale production and host immunogenicity), they also had some disadvantages (e.g., lower levels of transfection and gene expression); the disadvantages outweighed the advantages as they led to limited therapeutic efficacy (Jin et al. 2014). The field has intensified the use of viral vectors, with the first Food and Drug Administration (FDA)-approved gene therapy being performed in 1990 (Blaese et al. 1995). Initial advances in the utilization of retroviral vectors led to developments in the use of recombinant adenoviral vectors. Unfortunately, early clinical trials utilizing viral vectors produced mixed results, with a number of lethal outcomes; yet, the continuous development of the related technologies has generated some remarkable success (Tamura and Toda 2020). For example, adeno-associated viral (AAV) vectors have been utilized in more than 200 clinical trials for several genetic diseases such as spinal muscular atrophy (Mendell et al. 2017), hemophilia (Nathwani et al. 2014), and retinal dystrophy (Bainbridge et al. 2015).

Current Developments in Genetic Engineering

Early genetic engineering technologies using viral vectors to randomly insert therapeutic genes into a host genome exhibited side effects such as insertional mutagenesis and oncogene activation. The continuing development of biotechnologies was aimed at the search for techniques that permitted the intentional insertion of the desired DNA material at site-specific locations. This development led in the second decade of the twenty-first century to the creation of three types of engineered nucleases: ZFNs, TALENs, and CRISPR/Cas9. These engineered (also referred to as programmable) nucleases take advantage of natural cellular pathways of DNA repair to introduce targeted sequence modifications.

In both the zinc-finger nucleases (ZFNs) and transcription activator-like effector nuclease (TALENs) tools, DNA binding proteins (zinc fingers in ZFNs and TAL effectors, TALE, in TALENs) are fused with an endonuclease (FokI) to obtain precisely targetable nucleases (Prasad

et al. 2021). The DNA is cut, and the resulting double-strand breaks (DSB) are subsequently corrected by cellular break repair pathways that form small insertions or deletions, resulting in edited DNA. Zinc-finger domains recognize a trinucleotide DNA sequence (Kim et al. 1996). TALE proteins have multiple 33–35 amino acid repeat domains that recognize a single base pair (Christian et al. 2010). The difference between TALENs and ZFNs is that the former can target three nucleotides in one go and the latter can only address 1 nucleotide, thus making TALENs slightly more site specific with fewer off-target effects (Chandrasegaran and Carroll 2016). The techniques share many similarities, but their main limitation is in the labor and time consumed to synthesize new DNA binding proteins each time to target a new location (Kim et al. 1996). Therefore, scientists continued to look for easily programmable nucleases (Joung and Sander 2013).

Such a nuclease emerged in 2012 when it was reported that the bacterium *Streptococcus pyogenes* could be adapted for gene engineering. This system consists of the “Clustered regulatory interspaced short palindromic repeat” (CRISPR) of RNA (or, rather, two RNAs, CRISPR RNA, crRNA, and transactivating CRISPR RNA, tracrRNA [Cong et al. 2013]), which acts as a guide, and the Cas9 working as an endonuclease enabling double-strand breaks, DSBs (Jinek et al. 2012). The critical differences in CRISPR compared to previous approaches are: (1) the use of a short RNA sequence serving as the specificity-determining element for DSBs; (2) its relative simplicity, as it requires only a single guide RNA (sgRNA); and (3) it does not require the engineering of a site-specific nuclease, which is time- and money-consuming (Lino et al. 2018). Thus, the early research and development of gene engineering tools had determined that the prerequisite for any genome engineering technology is the capacity of its molecular agent to specifically bind and introduce a DSB in the target region, for subsequent correction by the cellular repair machinery. The CRISPR/Cas system fulfilled both requirements: specific target recognition by the spacer sequence and DSB by the Cas9 nuclease. Unlike in ZFNs and TALENs, target

recognition by CRISPR is mediated by the 20-nucleotide spacer sequence in the crRNA (Carroll 2014). Designing and synthesizing varying nucleic acid sequences to bind to target regions is much easier and cheaper than designing proteins for the same, thus CRISPR/Cas9 provided a simple, economical, efficacious, and versatile tool that could be made to target any desired sequence by altering only the ~ 20 bp spacer sequences (Prasad et al. 2021).

It is important to note that research into the CRISPR/Cas system had begun a long while back. It had long been known (Mojica et al. 1993) that the bacterial genome had certain sequences that repeated several times with regular spaces in between them. Mojica named these sequences CRISPR and identified them as fragments of DNA from bacteriophages that attack the bacteria; however, how and why these fragments were integrated into the bacterial genome remained unknown (Mojica et al. 2005). Jennifer Doudna of the University of California at Berkeley and Emmanuelle Charpentier of the Max Planck Institute for Infection Biology in Berlin elucidated the mechanism of the CRISPR/Cas system and developed it into a genome editing tool (Jinek et al. 2012). Their work was recognized by the 2020 Nobel Prize in Chemistry. It is noteworthy that other scientists working independently at the same time, including Feng Zhang of MIT and Harvard and George Church of Harvard Medical School, showed that CRISPR genome editing could work with mammalian cells. Thus, it took almost 20 years (1993–2012), since the discovery of the CRISPR/Cas system in bacteria, to elucidate the mechanism of its action and transform it into a gene engineering tool. Since 2012, however, the field of genetic engineering has experienced an incredible surge to perfect the technology and underscore its potential in both research and clinical practice. One of the derivatives of genetic engineering is gene therapy, which has advanced medical treatments for patients with congenital diseases and cancers. CRISPR technologies have continued to develop and are expected to continuously progress. Even though there are still many challenging obstacles to surmount to ensure their safe clinical application, these

methods signify the possibility of treatment for a wide variety of human diseases.

Ethical Issues

Genetic engineering offers opportunities for making beneficial, precise, and safe modifications in the genomes of various organisms (Chandrasegaran and Carroll 2016). Such molecular technologies are both speedier and cheaper than laborious and expensive crossing and back-crossing methods. For example, in some plant and animal genomes, such modifications have been applied to loci that provide tolerance to heat and drought. There are also examples of improvement in livestock. It is important to note that much of the current resistance to genetically modified organisms (GMO) stems from issues related to proprietary ownership and the political relationships between seed companies and crop producers. Beyond applications of the alteration of genomes to contribute to the food supply, there are opportunities to use genome-edited model organisms to understand and treat human genetic diseases. Genetic engineering has been used to grow functional human organs in model animals. There are also applications of genetic engineering to human therapy. It is important to know that various genetic engineering platforms (e.g., ZFNs, TALENs, and CRISPR-Cas9) are used for practical (e.g., agricultural and medical) applications, each of which has its advantages and disadvantages.

Genetic engineering is a powerful tool that can lead to alterations of both somatic and germline cells. Related genuine bioethical concerns have been explicated (Krishan et al. 2016). As for the public opinion, although there is broad enthusiasm for somatic cell genome editing as a future treatment for patients with inherited life-threatening or debilitating diseases, there are also important concerns pertaining to ensuring the safety, efficacy, and effectiveness of any genetic modification, as well as the accessibility of these treatments, which are currently very expensive (e.g., products by such companies as Glybera and Luxturna) for the general population. The

public opinion on somatic cell genome engineering is not homogeneous also because there are known unwanted “off-target” side effects, such as triggered molecular events (point mutations, inversions, translocations, insertions, and deletions), echo effects in other locations elsewhere in the genome, and time-delayed events. Public opinion on germline cell genetic engineering is much more unified and unequivocally concerning, featuring moral, religious, social, societal, and human research considerations (Liao 2019). It has been stated that genetic engineering generates threats to our cells, ourselves, and our civilization (Baylis 2019). It threatens our cells by introducing the risk of unintended and unwanted modifications that may result in one or more of the three Ds – disease, disability, or death. It threatens ourselves by striving to use genome editing technology to improve on our biology, our social norms, and patterns of interactions, as demonstrated both by science fiction, as in the movie *GATTACA*, and the self-administration of CRISPR treatment by Josiah Zayner and Aaron Traywick and, possibly, other biohackers. It threatens our civilization by creating an illusion of perfectibility and the drive to eliminate disability and, by default, diversity (Comfort 2012).

Thus, there is a pressing need for a set of carefully conceived regulations for genetic engineering technologies for molecular medicine and other nonclinical crop and food industries, which should ultimately be approved by the public. Generating such regulations is not a trivial task, as they require consensus in public opinion, debates among experts, opinions from bioethical experts, involvement of biotechnologists, regulatory frameworks within legislatures, and final guidelines and oversight for the finally permitted limited application.

Summary

Rapid recent developments in science have resulted in enormous technological advances in genetic engineering, but formulated important ethical questions regarding how best to harness their power for the benefit of humankind. As in the

case of other technological advances, such as atomic energy, society should be ready to apply such advancements wisely and carefully. Premature applications of the possible can lead to the morally impossible. As a renowned geneticist Eric Lander stated, “. . . we have only just skimmed the three-billion-year-old genetic text and already they’re saying, ‘Hey! I think I can improve this!’” (2000). It is important to match the speed of discoveries in the field of genetic engineering with an appropriate depth of contemplation regarding its applicability in human life, for the individual and the collective.

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Genius

Dean Keith Simonton
Department of Psychology, University of
California, Davis, CA, USA

Abstract

Although the Latin word *genius* first emerged in the mythology of ancient Rome, it eventually acquired three strictly secular meanings in the English language: (a) genius as a special talent that any person might have for a particular enterprise; (b) genius as eminent achievement in a culturally valued domain of creativity or leadership; and (c) genius as earning a superlative score on an intelligence test. Extensive empirical and theoretical research has been conducted using all three definitions. The resulting findings indicate that the three definitions correspond to largely separate phenomena. For example, having a special talent does not necessarily develop into highly acclaimed accomplishments, nor it is required that either of the former two guises of genius corresponds to an exceptional IQ. These three phenomena therefore bear distinct relationships with what have been identified as five aspects of the possible, namely, exploring possible worlds, exploring possible selves, exploring possible pasts, exploring possible futures, and exploring possible theories. After articulating some of the potential connections between genius and the possible, it becomes evident that there exists a rich potential for further research.

Keywords

Genius · Creativity · Leadership · Talent · Combinatorial theory · Free will

Alternative Definitions of Genius

The concept of genius has a long history that produced a rich etymology of multiple meanings (Ball 2014; Murray 1989). The Latin word *genius* originated in ancient Roman mythology. In simple

terms, each individual was born with a “genius,” a tutelary deity who functioned like a guardian spirit over the course of that person’s life span. Subsequently, the word’s meaning expanded to encompass more secular usages. For example, genius later came to refer to a “Natural ability or capacity; quality of mind; the special endowments which fit a man for his peculiar work” (*American heritage electronic dictionary* 1992). Thus, one could have a genius for carpentry or landscaping. This particular meaning often rendered *genius* interchangeable with *talent*. This potential semantic overlap is apparent in Francis Galton’s (1865, 1869) studies of genetic inheritance, where he first used the word talent before switching to genius just 4 years later.

However, Galton (1869) also used a far more demanding definition that requires the achievement of eminence in a culturally valued domain. In particular, the status of genius required “the opinion of contemporaries, revised by posterity” that establish a given individual as “a leader of opinion, . . . an originator, . . . a man to whom the world deliberately acknowledges itself largely indebted” (p. 37). This concept of genius falls in line with another dictionary definition: “Native intellectual power of an exalted type, such as is attributed to those who are esteemed greatest in any department of art, speculation, or practice; instinctive and extraordinary capacity for imaginative creation, original thought, invention, or discovery” (*American heritage electronic dictionary* 1992). Two points about this latter definition are noteworthy. First, the notion of inborn talent is still retained, but now that talent has to be actualized in terms of genuine accomplishments, as assessed by the consensus of contemporaries and posterity. Second, genius can be manifested in a great diversity of achievement domains – virtually every domain of creativity and leadership. Indeed, this diversity is witnessed in the domains that Galton (1869) chose to investigate “hereditary genius,” domains like science, literature, music, and painting, as well as politics, warfare, jurisprudence, and religion (see also Cox 1926; Simonton 1988). That said, genius tends to be most strongly associated with creative domains (e.g., Kroeber 1944; Murray 2014). In particular,

the most notable and uncontested geniuses by the achieved eminence definition are usually visual artists, creative writers, philosophers, and scientists. Examples include Michelangelo, Shakespeare, Descartes, and Einstein.

One final definition is the most recent but also among the most commonplace: A genius is someone with an extremely high IQ score on a standardized intelligence test. For example, one standard dictionary asserts that a genius is “A person who has an exceptionally high intelligence quotient, typically above 140” (*American heritage electronic dictionary* 1992). Although the specific cutoff of IQ 140 may seem a bit arbitrary, it actually originates in Lewis M. Terman’s (1925–1959) classic longitudinal inquiry in which this criterion was selected because it represented the top 1% of the population on the Stanford-Binet Intelligence Scale. Because that scale was devised in 1916, the IQ definition is only a little more than a century old. It departs from the other definitions in yet another fashion. Where the previous conceptions of genius concerned what made a person unique, the IQ definition treats everybody according to their placement on what purports to be a single dimension, namely, general intelligence (Spearman 1927). To be sure, some investigators have argued that there are multiple intelligences (most notably Gardner 1983). Yet from a purely psychometric perspective, ample evidence indicates that various assessments of alternative intellectual faculties are sufficiently correlated that a single factor underlies them all (Nyborg 2003). Hence, the IQ definition remains primarily generic rather than specific. Scientific research has produced no standardized aptitude test that assesses a bona fide “poetry IQ,” a “chemistry IQ,” or anything else domain specific. Instead, domain-specific measures tend to assess “achievement,” or acquired expertise.

Consistent with this last observation, IQ scores bear only a modest correlation with achieved eminence in most domains (Simonton 2009). The association is not zero, but it is too small to consider IQ and achievement as representing alternative manifestations of the same genius definition. By the same token, those who are highly

gifted do not necessarily grow up to become eminent achievers, nor must they score at superlative levels on IQ tests (Winner 2014). Accordingly, it is possible to distinguish three major definitions of genius that may bear some relation with the possible: (a) genius as a special talent for some endeavor; (b) genius as achieved eminence in a significant domain; and (c) genius as stellar intelligence as assessed by an IQ test.

Research on the Various Guises of Genius

Corresponding to each of the three genius definitions is a large body of empirical and theoretical research (Albert 1992; Simonton 2014b). Some of the research findings may have relevance in understanding some aspect of the possible.

The first definition has an obvious linkage with inquiries into childhood giftedness and talent in a diversity of domains, such as sports, chess, music, and mathematics (Heller et al. 2000). All of these domains require the acquisition of a specialized expertise, yet those youths who display a “genius” for the domain exhibit two outstanding features (Simonton 2014a). First, they take less time acquiring the necessary domain-expertise and thus “get better faster.” Second, they perform at higher levels for a given amount of expertise and thus exhibit “more bang for the buck.” Both of these advantages presumably ensue from underlying genetic factors. Even so, teasing out the behavior genetics behind such talent is not easy because the phenomenon turns out far more complicated than assuming simple linear and additive relationships (Simonton 1999). Science is certainly far from the point of estimating a talent profile based on DNA testing. In fact, the genetics behind general intelligence – a far simpler task – has yet to be fully fathomed (Plomin and Spinath 2004).

Surprisingly, empirical research on genius as eminent achievement goes back almost two centuries (Simonton 2014c). The first such study was incorporated by Quetelet (1835–1968) into a much larger monograph that established the normal “bell-shaped” curve in the statistical

treatment of human behavior. Yet the first monograph exclusively devoted to eminent achievers was Galton (1869), who was mentioned earlier. He applied Quetelet's concept of the normal distribution to what he called "natural ability" and then proposed that those at the upper tail of this distribution would inevitably attain distinction as either creators or leaders. Galton also argued that natural ability was in fact *natural* in the sense that it was strongly inherited and thus passed down through family pedigrees. Of course, subsequent research shows that environmental factors, such as family background and education, also have a major role to play in the emergence of genius (Simonton 2014a). In addition, to attain distinction in well-established domains of achievement, a considerable amount of time must be devoted to the acquisition of domain-specific expertise (Ericsson et al. 2018). Genius is both born and made.

Turning to the third definition of genius, namely, genius as superlative IQ, the research is comparatively rare. That does not mean that investigators rarely use intelligence tests. On the contrary, those measures are among the most frequently used and best standardized instruments in psychology. The problem, rather, is that few inquiries even attempt to capture a single participant who scores at the genius level of, say, IQ 140. After all, if that threshold marks the top 1% of the general population, a researcher might need a sample of least 100 to have any chance of obtaining a single case. Consequently, investigators adopting this definition have to use a special methodology to obtain a reasonable sample size for empirical research. Terman's (1925–1959) longitudinal study mentioned earlier was able to obtain a sample of more than 1500 high IQ boys and girls, but he was only able to do so by canvassing entire California school systems, largely using teaching nominations to preselect the "best and the brightest" before anyone started taking actual tests. Likewise, when Hollingworth (1926, 1942) conducted her pioneering work on the intellectually gifted, including children with IQs exceeding 180, she relied on the huge student populations available in New York City. The difficulties magnify when a researcher wants to

assess psychometric IQ in adult populations. Most standardized instruments designed for adults do not finely discriminate those at the upper tail of the IQ distribution. For that reason, when Roe (1953) studied 64 eminent scientists, she asked the Educational Testing Service devise a special test that focused on that elite subgroup. Even then, the eminent physicists in her sample simply refused to take the mathematics portion of the test, finding it insultingly easy!

Genius and Alternative Manifestations of the Possible

In laying out the field of the possible as a possible field of inquiry, Glăveanu (2018) described the following five possibilities: exploring possible worlds, exploring possible selves, exploring possible pasts, exploring possible futures, and exploring possible theories. Theoretically, if there are three distinct genius definitions and five forms of the possible, there are 15 potential combinations. In practice, however, genius-possible combinations vary greatly in inherent interest for future research. So here just the best possibilities will be discussed.

The exploration of possible worlds has an obvious connection with genius as achieved eminence in a culturally valued domain. Indeed, it is hard to imagine instances where geniuses do not attain distinction by such explorations. Artistic creators, such as writers, painters, and composers, produce masterworks that frequently depict worlds that never before existed. Scientific creators make surprising empirical and theoretical discoveries that generate new possibilities regarding how the world works, such as the operation of DNA or the phenomenon of black holes. Outstanding leaders in politics, business, and religion will often offer their followers, whether citizens, consumers, or believers, alternatives to the present world via innovative policies, products, or precepts.

Needless to say, these possible worlds may more strictly represent either possible futures or possible pasts as well. The creators of science fiction most often illustrate the former by

projecting present humanity into some utopian or dystopian world. Climate scientists will create possible futures, but in their case, the forecasts are predicated on mathematical or computer models. Working in the reverse time direction, the authors of historical novels will conceive pasts that could not possibly have been known, such as hypothetical conversations or conjectural romances, and at times may impose counterfactuals that generate alternative histories. Creative scientists working in certain disciplines, such as archeology, paleontology, evolutionary biology, geology, and cosmology, will also hypothesize possible pasts and even apply counterfactual thinking. An instance of the latter is found among the cliometricians who tackled such questions as whether slavery in the United States was economically viable, thus rendering the Civil War necessary rather than superfluous for its destruction (Fogel and Engerman 1974).

Under the genius-as-eminence definition, all of the possible worlds, futures, and pasts conceived by the creators or leaders were of sufficient importance to earn the person an enduring spot in history – the judgment of posterity that confirms the assessment of contemporaries. Uncontroversial examples would have to include Isaac Newton's *Mathematical Principles*, Charles Darwin's *Origin of Species*, René Descartes's *Meditations on First Philosophy*, Leo Tolstoy's *War and Peace*, Dante Alighieri's *Divine Comedy*, Emily Dickinson's poems, Michelangelo Buonarroti's Sistine Chapel frescoes, Ludwig van Beethoven's Fifth Symphony, Abraham Lincoln's *Emancipation Proclamation*, James Watt's steam engine, and Martin Luther's *Ninety-Five Theses*. In truth, thousands more undoubtable instances can be offered, particularly when turning to non-Western civilizations for further illustrations (Kroeber 1944; Murray 2003).

Yet the idea of exploring possible selves does not require such grandiose standards. In fact, such exploration ties more closely with the genius as talent definition, in which each person is endowed with some special capacity for success in a vocation or occupation. Because individuals are not born with advanced knowledge of what this peculiar genius might entail, they have no other option but

to test various possibilities until they finally discover their "thing" or "passion." It might be teaching swimming or raising pigeons or making apple pies. In some cases, that specific talent may align with a domain of creativity or leadership in which the individual ventures into the realm of potential achieved eminence. But it does not have to go that far. Just discovering our true genius in everyday affairs suffices. Still, to get there, the exploration of possible selves is most often required.

At this point, it becomes appropriate to bring in the genius as high IQ definition. Why do some people find that they have a special talent in a culturally valued domain and yet fail to cultivate that talent to achieve eminence in that same domain? One critical factor may in fact entail the level of general intelligence. Not only does research show that such intelligence correlates positively with success in a great diversity of occupations and professions (Gottfredson 1997), but also that those who attain eminence in most domains of creativity and leadership can claim high IQs (Simonton 2009). Hence, general intelligence, as approximately assessed by IQ tests, may determine what it takes to make it over the top – to convert personal talent to sociocultural genius. In this view, specific talents must combine with generic intellect that is then channeled into the particular domain of choice.

Now that all three genius definitions have been incorporated into the discussion in one way or another, the only item left to consider is the fifth potential possible, to wit, exploring possible theories. Here the most promising theoretical system may be the combinatorial theory of exceptional creativity developed by Dean Simonton (2003, 2010). Through an integration of mathematical models, computer simulations, and empirical tests on samples of actual creative geniuses, this theory proposes not only that creativity requires the combination of ideas or behaviors, but also that these new combinations must be generated with little or no prior knowledge of their usefulness or utility. Accordingly, the novel combinations must be subjected to subsequent evaluations to see whether they truly work, thus separating the bona fide actual from the merely possible. Although the development of this theory is recent,

it can be said to formally implement concepts that have been around for many decades, including trial and error (Bain 1855–1977), generate and test (Newell and Simon 1972), selection by consequences (Skinner 1981; see also Epstein 1991), and blind-variation and selective-retention (Campbell 1960; Simonton 2011). In any case, various combinatorial processes and procedures enable the creative genius to function as a genuine causal agent in history, producing potential futures that might not otherwise exist, nor even anticipated (Simonton 2018). As the philosopher Arthur Schopenhauer expressed it, “Talent hits a target no one else can hit; Genius hits a target no one else can see.”

Even if the above combinatory theory was originally designed to provide explanations and predictions with respect to creative genius, the same theory applies to everyday creativity, albeit the relevant processes and procedures operate at a more mundane level (e.g., less original combinations where the utilities are partially known, such as off-the-cuff spice additions to a favorite recipe). This more modest version of the theory then provides the basis for “free will,” or volitional choice, where the combinations are again selected based on a decision-making process that maximizes personal utility (Simonton 2013). In short, the combinatorial theory of creativity can also apply to the exploration of possible selves.

Conclusion

Given three separate definitions of genius and the five manifestations of the possible, the foregoing section may not have exhausted all of the potential pairings. Yet it should suffice to indicate some of the more prominent connections as well as underline their importance. That importance is both personal and sociocultural – ranging from possible selves to possible worlds.

Cross-References

- Fiction
- Innovation

- Insight
- Intelligence
- Invention
- Novelty
- Open-Mindedness
- Openness to Experience
- Poetry
- Political Imagination
- Possible Worlds
- Problem Finding
- Scientific Modeling
- Serendipity
- Simulation
- Social Change
- Sociological Imagination
- Speculative Research
- Talent Development

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George Herbert Mead

► American Pragmatism

Giftedness

Sally M. Reis and Joseph S. Renzulli
Neag School of Education, University of
Connecticut, Storrs, CT, USA

Abstract

Those labeled intellectually gifted either as children and/or adults exist in every ethnic, socioeconomic group and culture. Gifted and talented individuals exhibit a diverse and unlimited range of advanced learning and cognitive characteristics. They also differ, however, in cognitive, personal, and affective areas including academic traits, effort, temperament, educational achievement and attainment, productivity, creativity, and risk taking. Some individuals identified as gifted have very advanced capabilities and can self-regulate and sustain the effort needed to achieve personally, academically, and in their careers. Despite their label of giftedness, however, a significant number of very intelligent individuals fail to realize a high level of accomplishment or, as Glăveanu

(Eur J Psychol 14(3):519–530, 2018) suggests, realize their possible selves. This failure of realization either in their education or chosen professions often results in the label of underachiever in school or unfortunately, in life accomplishments. The reasons for their underachievement vary, but it is clear that some highly able and talented students are either unwilling or unable to devote the time and focus necessary to develop and realize their talents. The development of giftedness requires individuals to expend extraordinary levels of effort and focus, and some very high potential individuals do not or cannot make that commitment. This entry begins with definitions of giftedness and a brief overview of its history, before summarizing recent research in this area, and ending with research-based suggestions on how to develop giftedness and the educational and personal conditions to foster and enhance it.

Keywords

Intellectual giftedness · Cognitive ability · Academic talent · Creativity · Motivation · Task commitment · Talent development

Introduction

Despite the diversity of opinions in education and psychology regarding definitions of intellectual giftedness, several common themes emerge about intellectual giftedness and the academic and work conditions necessary for its development. The broad body of research related to intellectual giftedness is summarized in this entry, with a focus on highlighting seminal research on giftedness, and an overview of interesting and important theories to date. New research-based trends exist in defining, identifying, and developing academic gifts and talents, and scholars and researchers continue to debate definitions of giftedness. They also debate how intellectual giftedness develops and the specific characteristics of diverse groups of high potential youth. Understanding these characteristics helps educators and psychologists identify and nurture intellectual

gifts and talents in diverse populations of students. This entry also connects well to the possible as a field of inquiry (Glăveanu 2018), as educators who work with talented youth need to help them consider opportunities to imagine different selves in the future and how those selves connect with their vision of their talents over their lifespan.

Giftedness is an open, dynamic, multidimensional concept that is capable of building increasingly complex behaviors through self-organization and self-direction (Dai 2010; Dai and Renzulli 2008; Renzulli 2005, 2012). Theories about giftedness include the many ways in which intellectual giftedness develops; how culture defines and influences giftedness, and the presence and importance of nonintellectual components of giftedness in determining performance. Other themes relate to the assessment of intellectual giftedness which, Sternberg (2005) believes, is too often validated against the socially approved criteria resulting in the appearance of validity that may not exist within a specific sociocultural group. It is critically important to understand that there is no right or wrong definition to intellectual giftedness, especially in very high achieving children. Some theorists believe that we can identify gifted individuals across domains, even in children at a young age, as if there is a golden chromosome that enables one to be identified with the right assessment tools. Others believe that giftedness occurs within a domain, such as those who are scientifically or mathematically or even artistically gifted. Different conceptions of giftedness across cultures (Phillipson and McCann 2007) suggest the need for research and understandings of the ways in which languages and cultures influence and contribute to giftedness. And some theorists argue that a distinction exists between academic or lesson-learning giftedness and creative/productive giftedness (Renzulli and Reis 1985; Renzulli 2005).

Over three decades ago, Renzulli first summarized research suggesting that creative productive giftedness includes the interaction of above average ability, task commitment, and creativity that exists in certain people, at certain times, and under certain circumstances (Renzulli 1978, 1986,

2005). For example, Rachel Carson demonstrated her abilities, task commitment, and creativity in her groundbreaking work in both biological sciences and writing, leading to the creation of a book that created a new field and had influence on every aspect of ecology and protecting the environment from pesticides. This notion of giftedness argues against considering giftedness as a trait such as eye color or something that a child has or does not possess and therefore should be viewed from a more developmental perspective. For example, Gagné's (2000) Differentiated Model of Giftedness and Talent (DMGT) is another developmental theory that distinguishes giftedness from talent and discusses how outstanding natural abilities (gifts) can develop into specific expert skills (talents). Gagné believes that those labeled as gifted have the potential for extraordinary work and that those who are subsequently identified as talented develop their inherent potential for contributions. He identifies components that interact in multiple ways to foster the transition of moving from having natural abilities (giftedness) to systematically developed skills (talents).

Many of the chapter authors in two seminal books on conceptions of giftedness edited by Sternberg and Davidson (1986, 2005) identify similar themes about the developmental nature of intellectual giftedness, as do Dai (2010), Subotnik et al. (2011, 2012). One of the leading scholars in the area of intelligence, Simonton (2005, 2008), for example, proposed a model of giftedness in which talents result from the coming together of genetic components that develop on individual domain-specific trajectories.

Few, if any, researchers or theorists who have studied intelligence or intellectual giftedness continue to believe that giftedness is unidimensional rather than multidimensional. Similar to psychologists who believe in the multidimensional aspects of intelligence (Carroll 1993; Gustafsson and Undheim 1996), theorists who study intellectual giftedness (Gagné 2000; Gardner 1983, 2016a; Renzulli 1986, 2005; Sternberg 1985, 2005) agree that we must look beyond the traditional early notions stating that intellectual giftedness can be equated with a high score on one

assessment such as an IQ test. In fact, current research on assessment has found that large, significant discrepancies among verbal, figural, and quantitative reasoning abilities as measured by standardized IQ tests are more common among high- and low-ability students than among average-ability students (Lohman et al. 2008). This research argues against using a single composite IQ score for identification for gifted programs, as it may cause us to miss many highly able students whose scores are brought down by a single area of relative weakness, particularly students from high poverty or multicultural backgrounds. And of course, we know that potential gifts and talents remain latent in many people that are not favored with optimum circumstances and the opportunities, resources, and encouragement to develop their special talents (Renzulli and Reis 2014).

A strong body of research supports a broader based conception of giftedness as a combination of multiple qualities, in addition to intellectual potential, which includes nonintellectual traits such as motivation and creativity (Renzulli 1978, 2005; Sternberg 2005) and positive beliefs in self (Reis 2005). In this research, for example, Reis studied eminent, gifted women such as Mary Hunter Wolf, the first woman Broadway producer. This research included case studies of American women pioneers who, in addition to their intellectual talents, persevered despite negative stereotyping and other obstacles, to actively develop their talents and complete creative and important work.

Those labeled intellectually gifted are a varied group with differing cognitive profiles, learning disabilities, attention deficits, and varied learning styles. Some struggle with procrastination and perfectionism, and faster or slower processing speeds. Some high ability individuals demonstrate asynchronous (uneven) development, cognitive and/or academic relative strengths and weaknesses, or learning disabilities. The mere idea of intellectual giftedness itself has different meanings for different people, and discussions about these meanings are influenced by the culture, environment, and context in which gifts emerge, and the values associated with each. Not surprisingly, within different cultures, contexts, and environments, the outcomes of intellectual

giftedness vary. Cultural influences have been found to negatively or positively affect the choices and products that emanate from one's gifts, and one's ability to select, shape, and/or adapt one's environment (Sternberg 2018).

Biases and stereotypes about gender also have an impact on giftedness, as gifted males in many, if not most, cultures far surpass gifted women in accomplishment and professional attainments (Reis 1998, 2005). Reis proposed a theory of talent development in women that includes abilities (intelligence and special talents), personality traits, environmental factors, and personal perceptions, such as the social importance of the use of one's talents to make a positive difference in the world. In multicultural societies, it is usually the views held by the dominant culture about gender that generally guide the ways that giftedness is defined, identified and developed, with targeted opportunities, resources, and encouragement.

In addition to cognitive contributors to the development of high performance, a number of other factors referred to by Renzulli (2002) as "intelligences outside the normal curve" have also been found to play a role in the accomplishments of intellectually gifted young people and adults. Factors such as creativity, motivation, courage, optimism, sense of power to change things, empathy, and physical and mental energy are aspects of the gifts that we respect in the work of people such as Rachel Carson, Nelson Mandela, Mother Teresa, and Martin Luther King, Jr. (Renzulli 2002).

Important American Contributions to Research on Intellectual Giftedness

Seminal theoretical contributions related to research on intellectual giftedness are summarized in this section, which includes the historically important work of Terman, (Terman 1925–1959), and the recent works of Renzulli, Gardner, and Sternberg. The history of giftedness begins in America with Lewis M. Terman's edited five-volume series entitled *Genetic Studies of Genius* published between 1925 and 1959, resulting in a body of work that is widely acknowledged to be a

seminal contribution to the field of intellectual giftedness. The background of the use of the word "genius" in the title stems from his publication in 1916 of the Stanford-Binet Intelligence Scale, based on the work of Alfred Binet. Terman and his colleagues, using a revised test, identified gifted students, nominated by their teachers, who demonstrated what Renzulli has called "schoolhouse giftedness" as they performed well academically in the classroom.

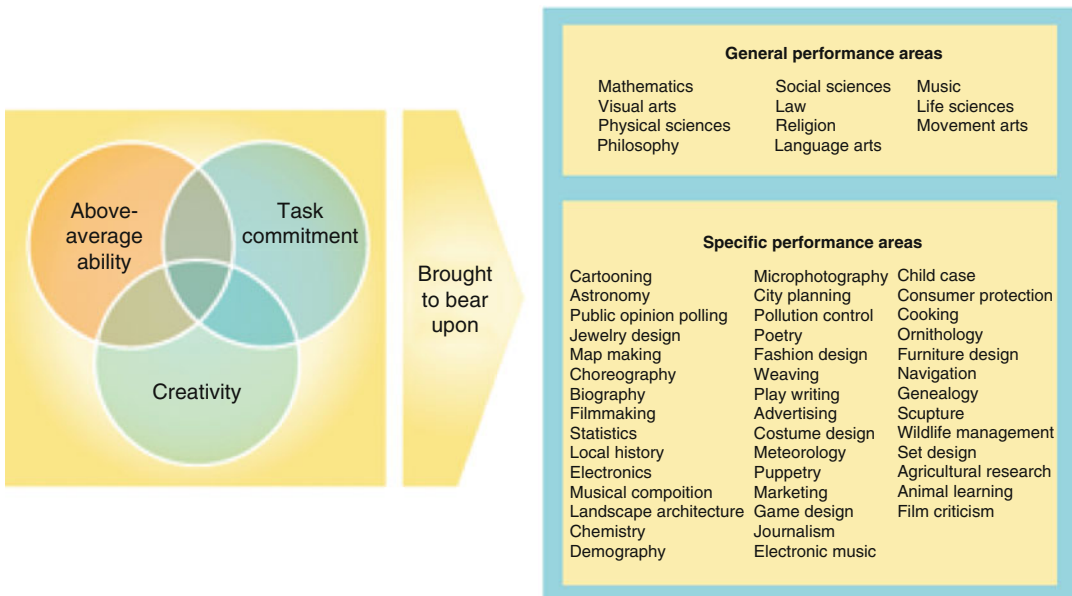
The problematic legacy of Terman's work is his conjecture that an IQ score is synonymous with giftedness and that the highest IQ is equal to genius. This legacy has not been helpful to the field of gifted education and those researchers, psychologists, and educators who believe that giftedness is developmental and includes additional necessary noncognitive attributes such as creativity, motivation, focus, and executive function skills.

Three-Ring Conception of Giftedness. For many years following the publications of Terman's work, both psychologists and educators equated intellectual giftedness with having high scores on an intelligence or IQ test. Renzulli's (1978, 2005) definition (popularly known as the three-ring conception of giftedness) helped to shift the focus of previous discussions from an examination of gifted individuals to an examination of gifted behaviors and his landmark work hypothesized the inclusion of nonintellectual components in giftedness. He defined giftedness as reflecting an interaction among three basic clusters of human traits – above-average ability, high levels of task commitment, and high levels of creativity – stating that individuals capable of developing gifted behavior are those possessing or capable of developing this composite set of traits and applying them to any potentially valuable area of human performance. He also distinguished between schoolhouse or high academic giftedness and creative productive giftedness, arguing that many individuals who excel in school and are labeled gifted do not make creative contributions as adults because they lack both creativity and task commitment for creative productive giftedness (Renzulli 1986). His definition is widely used and adapted by some states and school districts across the country.

Renzulli (2005) included creativity as one of the three clusters, calling it co-cognitive, as opposed to a noncognitive cluster. Creativity is one of the clusters of abilities that is necessary for creative productive giftedness to develop in Renzulli's definition. This type of giftedness involves the development of innovative ideas or products that will be valued by general or targeted audiences. Creative-productive giftedness also requires above-average ability in one or more areas of human performance, sensible risk-taking, a sense of purpose, and the motivation to work hard for a prolonged period of time. In later work, Renzulli (2002) continued his work on the three-ring conception by examining personality and environmental factors that contribute to socially constructive behaviors reflected in the works of people who have made contributions to the greater good in all walks of life. These interactive factors are depicted by the houndstooth background of his three-ring conception (see Fig. 1).

Multiple Intelligence and Gifted Contributors and Goodwork. Gardner's (1983) theory of multiple intelligences (MI) proposes seven relatively autonomous but interactive intelligences, based on his work with individuals exhibiting

extreme cognitive abilities (or deficits) in particular areas, such as music or math, but not general cognitive superiority. The seven intelligences initially proposed by Gardner were linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal. How does Gardner define intellectual giftedness? Gardner (1993) applied his MI theory to an analysis of the intelligences of creative leaders of the twentieth century, explaining that outstanding performance emanated from a particular rather than general intelligence. Gardner, for example, believed that Mahatma Gandhi excelled in intrapersonal intelligence and Einstein in logical-mathematical intelligence. Although these individuals excelled in one particular intelligence, Gardner theorized that most individuals exhibit some balance across levels of the various intelligences (Gardner 1993, 1995, 2016a). The GoodWork Project (Gardner 2016b) continues Gardner's long-standing efforts to probe the nature of good work across different professional domains and promote good work, described as high quality, socially responsible, and meaningful for making the world a better place. Gardner focuses on how people in diverse professions



Giftedness, Fig. 1 The three-ring conception of giftedness

can do good work, using examples such as Anita Roddick, the founder of the cosmetic company, The Body Shop, whose primary goal was to create a sense of humaneness in the business world. Roddick and colleagues undertook humanitarian work all over the world from living with poor families in Appalachia, West Virginia to working in refugee camps in Albania. Even after her death, with Roddick as their inspiration, the Body Shop continues to focus on social and environmental change.

Triarchic Theory, Balance Theory of Wisdom, and Successful Intelligence. Robert Sternberg developed his own multidimensional conception of intelligence, the triarchic theory of intelligence (Sternberg 1985) that has been universally debated and discussed. According to this theory, intelligence is the interplay between analytical, creative, and practical abilities in a given sociocultural environment. Analytical abilities are those most traditionally associated with intelligence and involve evaluating and analyzing information. Creative and practical abilities differ from traditional conceptions of intelligence as they are more associated with generating new ideas and applying knowledge in a given context. Sternberg's (1996) theory of successful intelligence explained how individuals can optimize their different strengths while compensating for their relative weaknesses. Successful intelligence shifts away from ability or aptitude measurement and relies on individualized assessments of achievement.

Sternberg is one of the few cognitive psychologists who has conducted research on the ways his theories of intelligence apply to giftedness (Sternberg 2005). Gifted individuals, according to Sternberg, demonstrate three common attributes that comprise his definition of intelligence (Sternberg 1985, 1996), including analytical giftedness, demonstrated by an ability to analyze and evaluate one's own ideas and those of others; creative giftedness, an ability to generate one or more major ideas that are novel and of high quality; and practical giftedness, an ability to convince people of the value and practicality of ideas. According to Sternberg, gifted individuals capitalize on their strengths and compensate for or correct their weaknesses. (Sternberg 1996).

People may show different patterns of skills, in general, and of giftedness, in particular periods over the course of their lives.

Summary of Giftedness and Talent Development for the Future

Research on the development of intellectual giftedness has demonstrated that talents develop across multiple domains and over time, with the right combination of innate talent, parental support, expert teaching, and the desire of the individual to apply the effort necessary to develop innate talents (Bloom 1985; Csikszentmihalyi et al. 1993; Renzulli 1978, 2012). Some research, such as Bloom's classic work, examined the childhoods and backgrounds of highly accomplished individuals across domains to identify common features contributing to their talent development. High levels of talent development require constant attention, nurturing, and focused effort and task commitment. Research also suggests that supportive experiences at school, in the community, and at home are critically important forces in transforming potential into fully developed talents (Bloom 1985; Csikszentmihalyi et al. 1993).

Subotnik et al. (2011, 2012) recently developed a new definition of giftedness as well as a comprehensive organizational scheme that integrates giftedness, talent, expertise, and eminence, conceptualizing them as a sequence of stages that under the best of circumstances lead to eminence. They acknowledge that the abilities of individuals do matter, particularly their abilities in specific talent domains that have different developmental trajectories. The variation in domains includes aspects such as when they start, peak, and end, and by the opportunities provided by society that are crucial at every point in the talent development process. In this theory, the authors highlight their belief that society must strive to promote these opportunities, but that individuals with talent must also assume responsibility for their own growth and development.

Renzulli and Reis (2014) have continuously advocated that schools need to become places for talent development and that educators should help all students develop their talents by providing

them with opportunities, resources, and encouragement to do so. In particular, this is critically important for students of poverty and for those who have less opportunities and resources to develop their talents. They advocate that some enrichment opportunities should be provided for all students to enable teachers and other observers of the work of young people better understand which students should receive additional and advance opportunities to develop their gifts and talents. Across these scholars, a clear trend exists in perceptions that giftedness can be developed – that there is a need for talent development both in schools and home environments. One important goal of developing students' high potential and aptitude is the need to actively develop outstanding achievement, creativity, or eminence in adult life, resulting in a higher number of creative and intellectual work produced in all fields. Research is increasing but we know little about the outcomes and effects of underachievement in talented adults and the feelings of failure and/or anxiety or depression that adults experience when they fail to realize their high potential. And although the area of giftedness across the lifespan is discussed in many different publications in our field, few comprehensive studies have been conducted on how talents and gifts emerge in adults and the types of support is necessary to develop these gifts and talents. Much important work remains to be accomplished.

Cross-References

- [Creativity](#)
- [Flow](#)
- [Imagination](#)
- [Intelligence](#)
- [Talent Development](#)

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Goal Orientations

Maciej Karwowski¹ and Ross Anderson²

¹University of Wrocław, Wrocław, Poland

²University of Oregon, Eugene, OR, USA

Abstract

This entry discusses the interplay between motivational goal orientations, creativity, and the possible as a field of inquiry. Crucial theoretical categories of goal orientations: mastery-versus-performance and approach-versus-avoidance, as well as the integrated 2×2 goal orientation model are discussed altogether with empirical results showing their links with creativity. Drawing on classic theories of achievement goals, this entry also discusses two widely studied constructs that are specifically relevant for goal orientations, creative mindsets, and creative confidence, all contextualized within the possible.

Keywords

Mastery and performance goals · Approach and avoidance · Fixed and growth mindsets · Creative self-efficacy

Creativity is goal-directed activity. Although simple, this statement covers an essential characteristic of creative activity. Even if popular literature promotes many examples of famous creators who benefited from “aha moments” – sudden insights (Insight) that seemed to come out of nothing – the idea that activity leading to creative accomplishment is unintentional is extremely unlikely. Quite the opposite is true. Creative activity requires a confluence of different characteristics and opportunities, including: cognitive (divergent thinking, intelligence), personality-related (openness, curiosity), motivational (creative self-efficacy, intrinsic motivation), environmental (supportive climate), time devoted to training, and, of course, luck. Creative activity most often begins with a goal, even if exploratory, and goals play a crucial role in motivation and self-regulation during creative activity. How individuals frame their goals

plays an overarching role in shaping the possible for personal development and outcomes in one's life and work. In this way, the clearest link between goal orientations and the possible exists at the level of exploring possible selves (Glăveanu 2018).

Importantly, being goal-directed does not mean that all creators always have a clear perspective of an end-product to be achieved. Goals might be operationalized in more general and less material terms than a published book, finished piece of art, or composed symphony. For instance, the development of competency and eventual mastery with a technique, material, or process will open different possibilities than goals of public recognition. This entry discusses how the conceptual framework of achievement goals, influential in motivational literature, can inform creativity research and, in turn, connect to the possible as a field of inquiry. To this end, the history of achievement goals and the evolution of this construct is briefly discussed alongside the scarce empirical evidence that links achievement goals to creativity. Next, more distal components of achievement goals theories – creative mindsets and creative self-efficacy – are introduced. This entry closes by showing some promising research areas allowing for effective integration of goal orientation models with creativity and the possible.

The interests in achievement goals date back to the mid-1970s when two psychologists independently proposed the initial framework of analyzing and studying purposes that might motivate (or de-motivate) people during their activity. Carol Dweck (1975), continuing her work on learned helplessness, developed the mastery-versus-performance goals distinction. John Nicholls (1976), continuing his research on self-perception of abilities and competence, developed a theory of ego-versus-task involvement goals. Although coming from different theoretical traditions and varying in terms of specific propositions, these two models share crucial assumptions. Given that the mastery-approach perspective is more prevalent in the contemporary literature, this approach to achievement goal distinction is followed in this entry.

Mastery and Performance Goals

In Dweck's works, mastery orientation was initially theorized as a characteristic of children who failed under challenging tasks and, yet, still displayed an adaptive pattern of attribution, making their failure productive. In this way, Dweck, and researchers that followed, found that people with mastery orientation attribute their struggles and failures to either insufficient effort (i.e., *I did not try sufficiently hard*) or ineffective strategies (i.e., *I dealt with this problem the wrong way*). Therefore, mastery orientation, sometimes called *learning goals*, posits the main reason for engaging in a particular activity is developing an individual's competence and mastering a task. When faced with a failure, people with a mastery orientation are able to persist and continue working on a problem. Mastery orientations make failure an expected, productive struggle on the path toward achievement. In line with Heidegger's (1962) ideas about the possibility of becoming, the openness to unexpected setbacks in a mastery orientation fuels a latent potential for growth rather than a deficit orientation toward one's limits.

Performance orientation was theorized as the result of maladaptive patterns in the face of challenge and failure. People holding performance goals orientation explain their failures as a lack of sufficient ability to succeed in a task and often react with negative, self-defeating emotions. The purpose of performance goals can be twofold: (a) to *show off* and demonstrate competence in a particular task or (b) to *hide* and avoid showing incompetence when faced with a challenging problem. The performance goals orientation was theorized to affect individuals maladaptively by evoking misdirected attribution and negative emotions, leading to suboptimal effects on motivation and achievement. Narrowly focused performance-directed goals, essentially, close off individuals from different possible outcomes.

Although several theorists predict that mastery orientation will lead to positive effects while performance orientation is detrimental leading to adverse outcomes, for example, in school, the evidence for such claims is scarce. Several studies demonstrated that mastery orientation is indeed

connected with positive emotional reactions and generalized positive affect, and performance orientation correlates with negative affective states and anxiety. What is far less clear, though, is the role of these orientations for different types of effective functioning under different circumstances – be it learning, problem-solving, or the “what-if” possibility thinking, key to creativity.

Gaps in the literature prompt the question – what is the role of goal orientation in the creative process toward the possible? Given that creativity is polimotivational, where conflicting motives can lead to creative activity (Anderson and Karwowski 2020), there are convincing reasons to argue that under certain circumstances, both mastery and performance orientations may be conducive. On the other hand, there is a classic theorizing and research tradition in creativity literature that demonstrates the benefits of intrinsic motivation for creative thought and action (Amabile 1996). Mastery orientation is conceptually close to intrinsic motivation: both are driven by curiosity, personal value of a task, and need for cognition. Still, while intrinsic motivation denotes activity driven by its autotelic value, mastery orientation is, by definition, *telic* – goal-oriented to develop one’s skills and master a task. This reasoning would lead to a prediction that mastery orientation, thanks to its focus on development, improvement, and learning, will support creative thinking and activity and what they make possible for oneself and the world around them. Performance orientation, with its emphasis on competition, demonstrating one’s competence, and avoiding overly difficult situations that might demonstrate limitation, seems like an antithesis of creativity and the possible. But what is the empirical evidence for this prediction?

Intriguingly, the literature on the links between mastery-versus-performance goal orientation and creative potential and accomplishment is sparse. In a study of Chinese R&D employees (He et al. 2016), mastery orientation was found to be significantly and positively, yet, at the same time, weakly ($r = 0.18$), related to creativity, while performance orientation was negatively linked to creativity. Apart from simple correlational evidence, empirical relationships were more

complicated. Mastery orientation moderated the relationship between failure feedback and creativity in the work environment. The link between supervisors’ failure feedback and employees’ creativity was positive and significant among employees high in mastery goals, only. This moderation implies that goal orientations might not necessarily serve as direct predictors of creativity, rather goal orientations might be interdependent with other factors and, in a way, determine what a person makes possible from constructive feedback.

That logic is consistent with the results of an experimental study that explored the links between risk-taking and creativity and the potential moderating role of goal orientations (Simmons and Ren 2009). Results demonstrated that, not only were people more creative under a risk-taking condition, but also when risk-taking was accompanied by a more adaptive mastery goal orientation. Taking risks can be seen as a disruptive necessity to new possible futures for oneself and the surrounding sociocultural environment. In educational settings, Beghetto (2006) has shown that mastery orientation significantly predicted students’ creative self-efficacy, but – contrary to what might have been expected – he also found positive links between performance goal orientation and creative self-efficacy. A recent longitudinal study (Jankowska and Karwowski 2019) focusing on the development of children’s creative thinking found that parents’ performance orientation was positively related to children’s initial level of creative ability but negatively predicted the developmental changes in their children’s creative abilities. In other words, although children whose parents held stronger performance goals started with higher creative abilities, their developmental trajectories not only were flatter but even tended to decline with time. Parental goal orientations can limit what is possible for their children (Lebuda et al. 2020). In contrast to the potential negative influence of parental performance goals orientation, parents’ mastery orientation was unrelated to changes in children’s creative thinking. A study on teachers (Hong et al. 2009) demonstrated strong positive links between their own mastery orientation and the creative skills used by

their students. They found no relationship between teachers' performance goals orientation and students' creativity.

In sum, these results allow for a tentative conclusion that while mastery orientation, in an individual, their parent, or their teacher, may be conducive to creativity, the evidence regarding performance orientation is mixed. Importantly, the potential role of mastery orientations should not be overestimated, given the consistently weak observed effect size. There are studies demonstrating effects of performance goals on creativity as negative, null, or positive; as such, an unambiguous conclusion regarding its role is impossible, at this time. These ambiguities call for new studies on different samples with well-established measures and a more finely ground model of goal orientations relevant to creativity and the possible, specifically. Such a model, extending the pure mastery versus performance dimension, has been proposed in the achievement goals literature by synthesizing it with a classic approach-versus-avoidance perspective.

Approach and Avoidance Orientation

Early works on mastery and performance goals orientations ignored the possibility that these two goals may be approach- or avoidance-driven. This is surprising, as the distinction between approach and avoidance is classic in motivational literature (see discussion in Elliot 1999). While approach orientation denotes expecting the possibility of positive outcomes and striving for success, avoidance orientation is linked with failure expectations and, consequently, avoidance of potentially tricky tasks. The combination of mastery-performance goals with approach-avoidance goals was proposed by Elliot (1999), who demonstrated that a simultaneous analysis provides an additional input into motivational goals. Elliot suggested that performance goals are not always detrimental for adaptive functioning and achievement, and should be divided into approach versus avoidance orientations. Performance-approach goals hold a focus on the attainment of sense of competence, and performance-avoidance hold a focus on

avoidance of sense of incompetence. In early conceptualization, mastery goals were theorized as approach goals only, with an emphasis on the development of competence and task mastery; yet, a 2×2 achievement goals framework (Elliot 1999) delineated a mastery-avoidance category (e.g., avoiding self- or task-referential incompetence).

Though performance-avoidance goals may be detrimental, the central premise of the 2×2 achievement goal model is that performance-approach goals, with a focus on normative competence, might be conducive to achievement as well. Thus, the introduction of the approach-avoidance continuum into research on achievement motivation has allowed for more nuanced interpretations of motivational goals' effects. But how does this distinction inform discussion about creativity and the possible that it opens and expands for self and others?

A safe conclusion from two decades of studies is that creativity benefits from approach orientation and is suppressed by avoidance orientation. This seems commonsensical – feeling agentic to be creative requires activity that is often risky and unknown, so exploration typical for approach motivation is necessary for creativity. It is much harder to imagine or theorize how avoidance motivation could be useful for creativity. Empirical evidence confirms that approach motivation helps to solve insight problems and generating ideas (Friedman and Förster 2002), and approach-related emotions, both positive (e.g., feeling happy) and negative (e.g., feeling angry), are far more conducive to creativity than avoidance-related emotions (both positive, e.g., feeling calm and negative, e.g., feeling sad; Baas et al. 2008). However, as Roskes and her colleagues (Roskes et al. 2014) theorized, avoidance motivation may boost creativity under certain conditions, like the presence of constraints that channel cognitive resources. Providing an individual solving a problem with specific, procedural instructions illustrates how a channelling, yet constrained situation could help solve creative problems for people who are driven by avoidance motivation (see Roskes et al. 2014).

Considering the 2×2 achievement goals model again, a natural prediction would be that mastery-approach goals and, to a lesser extent, performance-approach goals should be conducive to creativity, while the link between creativity and avoidance-related goals – both: mastery-avoidance and performance-avoidance is less clear. A study on Taiwanese junior high school students (Peng et al. 2013) partially confirms this prediction. While both approach goals (mastery and performance), as well as mastery-avoidance goals, indirectly boosted students' divergent thinking as a result of their autonomous motivation, performance-avoidance goals were unrelated to divergent thinking.

Although the 2×2 achievement goals model forms a useful motivational framework for creativity literature, more research is needed to fully untangle the role of, and conditions for, mastery-performance and approach-avoidance dimensions for creative thinking, activity, and achievement. Research suggests these goal orientations are not always contradictory in adolescence, but may actually coexist. As such, future studies may benefit from not only showing static correlational links between goal orientations and aspects of creativity but also by analyzing the interrelations and interactions of goal orientation to explain creative functioning. Additionally, future research should investigate the potentially varying role of goals for different phases of the creative process. Future studies might also benefit from including relevant antecedents and consequences of goal orientations into a testable theoretical model. Two existing constructs – creative mindsets and creative confidence – hold unique promise for such models. The remaining part of this entry will focus on the role of these factors in relation to goal orientations and the possible.

The Role of Creative Mindsets for Goal Orientations

Creative mindsets refer to a specific part of implicit theories that people carry about creativity, specifically, the perceived roots of creative potential and perceived susceptibility for creative

potential to change or remain stable. The idea of mindsets was introduced by Dweck (e.g., Dweck 1986), who proposed that people differ in their beliefs about the potential changeability of human characteristics and the sources for that change. So-called entity theorists (people holding a “fixed” mindset) believe that traits, such as intelligence, are inborn and impossible to change – clearly at odds with holding a philosophy of the possible for oneself and others. Incremental theorists (people holding “growth” mindset) perceive human characteristics and abilities as malleable with potential for change and development given sufficient effort, training, and use of effective strategies – an orientation toward the possible.

In creativity literature, there is a growing interest in creative mindsets as plausible regulatory mechanisms explaining the likelihood of engaging in creative activity (Karwowski 2014). Interestingly, in the case of creativity, fixed and growth mindsets do not form the opposite ends of one continuum but often coexist (Karwowski et al. 2019b). Holding these seemingly contradictory beliefs simultaneously could relate to common societal narratives about an assumed destiny for creative genius, individual experience of success in one domain and not another, or other unexamined theories individuals carry. Indeed, especially among people who value creativity and have prior creative achievement, the paradoxical high-growth-high-fixed pattern is surprisingly often met.

Regarding creativity and the possible, it is important to ask why mindsets matter for goal orientations? In her early theory, Dweck proposed that mindsets are among the most critical factors that cause goal orientations – people who hold a fixed mindset do not believe in the possibility to change and improve and naturally adopt a performance goals orientation that. Consequently, those holding a fixed mindset engage in activity for the sake of confirming their self-perception. For instance, they may aim to demonstrate to others that they are able to solve a specific problem or that they are better than others in a particular task. At the same time, such people tend to avoid a difficult task that may form a threat for their self-perception in case they fail. Incremental

theorists – people holding a growth mindset – are much more likely to adopt mastery goal orientation with a focus on improving in a task and developing their skills.

Although studies conducted in educational settings confirm Dweck's propositions, the question about the links between creative mindsets and goal orientations in creativity is still to be explored and could support theorizing around motivation and orientations toward the possible. A tentative answer, consistent with hypotheses, was established by a study from Mexico (Puentes-Díaz and Cavazos-Arroyo 2017), showing that, indeed, growth mindset positively predicted mastery orientation, while fixed mindset positively predicted performance-avoidance goals.

Given increasing interest in creative mindsets, it seems prudent to advise future researchers to include goal orientations into their theoretical framework, research designs, and studies. One might consider performance goals as mediators in the relationship between mindsets and creative behavior. Studying mindsets alone may, in part, explain the underlying belief but it does not test important mechanisms that lead from a belief to creative action. Not only are motivational goals among highly plausible mechanisms but their inclusion may also (even if partially) explain inconsistent findings reported in the literature. Indeed, it happens that some observed links between mindsets and creative thinking or efficiency of problem-solving are weak or even null (e.g., Hass et al. 2019). It seems likely that these mixed findings would be more understandable if goal orientations are taken into account.

The Role of Creative Confidence

Creative confidence is another key construct that should be emphasized when goal orientations are theorized in creativity research. Creative confidence may be operationalized as a more stable creative self-concept – “holistic cognitive and affective judgments of creative ability in and across particular domains” (Karwowski et al. 2019a, p. 399). Creative confidence also relates to more task- or situation-dependent creative self-

efficacy, or the “perceived confidence to creatively perform a given task, in a specific context, at a particular level” (Karwowski et al. 2019a, p. 399). Both aspects of creative confidence – creative self-concept and creative self-efficacy – are among intensively studied constructs in creativity literature, precisely because of their motivational functions.

Why does creative confidence matter in relation to goal orientations? Early theorizing posited that, while mastery orientation is usually conducive to achievement, performance orientation is especially harmful when accompanied by low perceptions of self-competence (Dweck 1986). In other words, one could expect that the links between performance goals and creativity are negative only among people who do not believe that they can be creative. In contrast, when creative confidence is high, it may buffer the negative effects of performance orientation. If followed consistently, this logic leads to a more complex model in which creative mindsets are antecedents of goal orientations with growth creative mindset building mastery orientation and fixed mindset translating into performance orientation. Those resulting goal orientations would strengthen or limit the chances for creative outcomes – mastery orientation would be expected to support creative thinking. However, the hypothesized negative role of performance orientation – specifically, performance-avoidance orientation – would be moderated by creative confidence. In that model, even if someone held a fixed creative mindset, believing in little potential for malleability of their creative skills and the skills of others, they would likely also hold a performance goal orientation and, yet, could still be expected to reach creative achievement if their creative confidence was high. In the context of the possible, creative outcomes that result from this mindset-to-mastery process can be considered the actualization of a possible self that also opens up new possibilities for others.

Although interesting, this hypothesized model awaits empirical examination. Previous studies focused on links between mindsets and confidence, showing that indeed people with a higher growth mindset tend to have higher creative

confidence than those with a fixed mindset (Karwowski 2014). Other research treated creative confidence as a mediator between mindsets and creative problem-solving (Royston and Reiter-Palmon 2019). The potential moderating effects of confidence in the link between goal orientations and creativity is yet to be tested.

Discussion

Goal orientations are essential for achievement motivation theorists and educational psychologists. Though often overlooked, their role for creative thought and action has implications for what is made possible for self and others. The overview presented in this entry emphasizes the potential fruitfulness of goal orientations as factors that may enrich scholars' understanding of motivational factors conducive to creativity. Although the models discussed here were developed in different theoretical traditions and rarely directly referred to creativity, they allow for three testable predictions related to creativity with implications for the possible.

First, by its nature, creativity is much more approach- than avoidance-oriented. Although, under certain, very specific circumstances, avoidance motivation may be conducive to creativity, in general, creativity is exploratory, depends on an openness to different possibilities, and benefits from an approach motivation. The open question for future research is to what extent both mastery-approach and performance-approach orientations support creativity and what are the boundary conditions for such influence.

Second, while the available evidence suggests that mastery orientation is, generally, conducive to creativity, the role of performance orientation remains ambiguous. Though evidence would suggest performance-avoidance orientation should suppress creative thinking, it is unclear if the same will apply to performance-approach orientation. Similarly, factors that moderate the relationship between performance orientation and creativity should be considered in much more detail. For instance, is creative confidence moderating these links as hypothesized? Is performance

orientation harmful to creativity only among those who do not believe in their creative capacities? These problems require much more systematic and rigorous tests in the future.

Third, and finally, the growing number of studies exploring creative mindsets should incorporate goal orientations into research designs. Based on theoretical premises, mindsets are among the most critical causes of specific goal orientations. Consequently, goal orientations may mediate the relationship between creative growth and fixed mindsets and creative activity. Given evidence for malleability of mindsets, this area of research may be primed for intervention designs that aim at improving individuals' goal orientations to creativity and their resulting potential for creative activity and achievement. And given how intertwined creative mindsets are to a personal philosophy for growth and the possible in one's development, research on future interventions should include a focus on benefits in the realm of the possible for both the self and others (e.g., new career trajectories, growth in an artistic domain, enhanced interpersonal relationships, and professional work that benefits others).

To conclude, goal orientations hold the potential to enrich scholars' knowledge about self-regulation and motivational processes engaged in creative activities and processes, which underly the possible in the future for one's own life and in the life of others. Therefore, future studies in the possible and creativity should include measures of mastery and performance orientations and approach-avoidance orientation to understand better why and when people decide to engage in creative behavior and think about and live in the possible.

Cross-References

- ▶ [Creative Development](#)
- ▶ [Creative Mindsets](#)
- ▶ [Creative Self-Efficacy](#)
- ▶ [Creativity](#)
- ▶ [Curiosity](#)
- ▶ [Insight](#)

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Happiness

► [Positive Psychology](#)

Here and Now

Alice Barale
Università degli Studi di Milano, Milan, Italy

Abstract

The concept of “here and now” is central to a large number of psychotherapeutic practices, especially those influenced more or less directly by the emerging popularity of mindfulness (see chapter “Meditation”). In this context, however, the idea of here and now will be analyzed from the point of view of philosophy. This makes it possible to understand two important issues which form a connection between the here and now and the question of the possible: (1) The here and now is never a pure present, but rather a unity between different temporal and spatial dimensions. (2) The true experience of the here and now is not the oblivion of the past and future (or the indifference towards them), but rather a real and active synthesis of these different temporal dimensions. Through this synthesis, the here and now becomes a moment of possibility.

The concept of the “now” has been more investigated in philosophy than that of the

“here,” because it belongs to the field of the philosophy of time and to the question of the instant. In this context, however, the analysis will focus on some authors for whom the “now” cannot be separated from the “here.” This is something that has to be thought through right from the beginning: despite a certain current emphasis on the “now,” “here and now” contains also the “here.” This means that “here and now” does not imply a pure present, but rather something different, which is worth investigating.

This will be done through some examples taken from nineteenth-century philosophy, in particular from Martin Heidegger, Walter Benjamin, Jacques Derrida, and Jean-François Lyotard. This list is not exhaustive, because the aim is not to consider all interpretations of the here and now that have been given, but to consider some significant examples that cultivate a connection between the “here and now” and the possible.

Keywords

Presence · Time/space · Interruption ·
Immediacy · Philosophy · Possible

Introduction

The concept of “here and now” is central to a large number of psychotherapeutic practices, especially those influenced more or less directly by the

emerging popularity of mindfulness (see chapter ► “Meditation”). In this context, however, the idea of here and now will be analyzed from the point of view of philosophy. This makes it possible to understand two important issues which form a connection between the here and now and the question of the possible: (1) The here and now is never a pure present, but rather a unity between different temporal and spatial dimensions. (2) The true experience of the here and now is not the oblivion of the past and future (or the indifference towards them), but rather a real and active synthesis of these different temporal dimensions. Through this synthesis, the here and now becomes a moment of possibility.

Definition and History

The concept of the “now” has been more investigated in philosophy than that of the “here,” because it belongs to the field of the philosophy of time and to the question of the instant (see for example North 2018; Hoy 2009; McInerney 1992). In this context, however, certain authors will be analyzed for whom the “now” cannot be separated from the “here.” This is something that has to be thought through right from the beginning: despite a certain current emphasis on the “now,” “here and now” contains also the “here.” This means that “here and now” does not imply a pure present, but rather something different, which is worth investigating.

This will be done through some examples taken from nineteenth-century philosophy, in particular from Martin Heidegger, Walter Benjamin, Jacques Derrida, and Jean-François Lyotard. This list is not exhaustive, because the aim is not to consider all interpretations of the here and now that have been given, but to consider some significant examples that enable an examination of the here and now in its connection to the possible. First, however, it is necessary to say something of the history of the “here and now.”

The expression “here and now” derives from the Latin “hic et nunc,” where it generally indicates an urgent task that needs to be accomplished. This expression’s connection with the

idea of a task is relevant in this context, and it will be necessary to return to it. In ancient Stoicism, “hic et nunc” became an important idea, meaning the necessity of self-awareness or attention (*prosoché*) (see Sellars 2006, p. 133; Sharples 1996, p. 130). Donald Robertson has remarked that while in the current interest in mindfulness, the idea of attention to the present is often associated only to the eastern tradition of Buddhism, one should remember that it was already important in the western philosophical tradition, in particular in Stoicism (Robertson 2013, pp. 165–181). Pierre Hadot characterizes the *prosoché* as “a continuous vigilance and presence of mind, self-consciousness which never sleeps, a constant tension of the spirit” (Hadot 1995, p. 44). This connection between the origins of the concept of “here and now” and the idea of “attention” is also very important and it will be necessary to return to it.

In modern philosophy, the most important investigation of the “here and now” has been given by Georg Wilhelm Friedrich Hegel, at the beginning of the *Phenomenology of Spirit* (Hegel 2018). Hegel’s argumentation is complex but it is worth it to at least say something of it here. “Sensible certainty” or sensation is presented by Hegel as the knowledge that a particular subject has of a particular object, which can be described as a “here and now.” This knowledge of a “here and now” appears as the richest and the truest knowledge that anyone can have. However, if considered, it reveals itself as a mere and empty abstraction. In fact, the “now” does not indicate something stable, but a multiplicity of things that varies at every moment. For example, the “now” can be the night, when someone starts considering it, but it becomes the midday, when the same person goes on with her analysis. In the same way, the “here” can indicate a tree, when someone is in a certain place, but then it becomes a house, when the same subject moves. What remains, therefore, is only the linguistic expression “here and now,” which indicates any here and any now. The “here and now” is not the richest and most concrete knowledge, but rather the most empty and abstract. One could object (and it has indeed been done: see for ex. Maldiney 1973) that the

“here and now” is conceived by Hegel already in linguistic terms, while there could be an impression of a “here and now” that precedes language. However, the important aspect of this analysis, in relation to the issue of the possible, is that the possibility disclosed by the “here and now” can never be immediately attained. Rather, it is always the result of a specific path to be undertaken.

Research on the Here and Now

Martin Heidegger

The German philosopher Martin Heidegger – former student of Edmund Husserl, the father of Phenomenology (which will be addressed shortly) – had a fundamental influence on nineteenth-century philosophy, in particular on the currents of existentialism and hermeneutics. One of Heidegger’s most important books was *Being and Time*, published in 1927. There is a key-term in this book, “Dasein,” which indicates human existence, and is often translated in English as “being here and now” (see for ex. Kisiel 1985, p. 193; Olivier 2003, p. 136). In the current English edition, however, *Dasein* is always maintained in German, except when its two components (“Da” and “sein”) are stressed by Heidegger himself through a hyphen. In these cases, Da-sein is translated literally, as “being-there” (Heidegger 2001).

According to Heidegger, the *Dasein* is intrinsically connected to the question of the possible. The “being here and now” of human existence must be intended as a possibility to be. It is not possible to say “what” the Dasein is, but “its essence lies rather in the fact that in each case it has its essence to be” (ivi, § 4, pp. 32–33).

It is in relation to this possibility of being that the dimension of the moment – which is not called “now” in this book, but rather “Augenblick”: “moment of vision,” according to the literal meaning of the German term, becomes important. The *Augenblick* is what enables a break in the monotone flow of the inauthentic life and face a more authentic way of existence (ivi, § 68a). In the instant, as in a moment of rupture, humans are able to hear the “call of conscience” and

acknowledge their finitude. This is the famous theme of the “being for death,” which does not mean to actively pursue death, but rather to choose death as a possibility that belongs to true human nature.

In their everyday life – this is Heidegger’s thesis – humans tend to forget their finitude and escape from themselves. Their temporal dimension is that of an inauthentic present, of a “making present.” The unauthentic time of the everyday life tends to hide away the *ecstatic* character of time, that is, the unity that every present moment has with past and future. The authentic present, on the contrary, is a reminder of the true temporal nature of humankind: “In contradistinction to the moment of vision as the authentic Present, the inauthentic Present is then called ‘making present’”. Formally understood, every Present is one which makes present, but not every Present has the character of a ‘moment of vision’” (ivi: 388). Heidegger calls “now (Jetzt)” the inauthentic present, opposed to the authentic present of the “Augenblick.” Besides this terminological question, however, Heidegger’s “Augenblick” appears to be quite near to the “nunc” of the Latin “hic et nunc,” also because of the urgency that it expresses. The more authentic life must be chosen immediately, in a moment that imposes itself over the continuity of time in which humans try to forget themselves.

What about the “here,” yet? The spatial dimension of existence is addressed by Heidegger in the first division of *Being and Time*. “Being in the world” is the “basic state of Dasein.” Humans are not *in* the space, but their existence *is* intrinsically *spatial*: “Space is not in the subject, nor is the world in space. Space is rather ‘in’ the world in so far as space has been disclosed by that Being-in-the-world which is constitutive for *Dasein*. Space is not to be found in the subject, nor does the subject observe the world ‘as if’ that world were in a space; but the ‘subject’ (Dasein), if well understood ontologically, is spatial” (ivi, 146). The “there” of the “being-there,” then, is something with which humans are *always already* in relation.

A prior question needs to be raised, however. Is existence a “being there” or a “being here”? The

question is not a merely terminological one. It not only concerns the fact that the German term for existence is “*Dasein*” (“being there”), but also Heidegger’s attempt to consider things from the outside, or at least from a neutral perspective, from his *foundational* aim. Yet there is also another reason for this prevailing of the “there” over the “here,” which has to do with the disappearance, or more precisely the “collapse,” of the spatial dimension itself into the *Augenblick*.

What happens, in fact, to the “there,” when the *Augenblick* comes in which humans can hear the “call of conscience”? The emotional state that corresponds to this moment is that of anxiety (ivi, § 68b). Anxiety shows the “being-in-the-world” as deprived of its sense: in anxiety, the everyday world collapses: “In anxiety the usable stuff in the environment, and in general all intraworldly entities go under. The ‘world’ has nothing to offer any more . . . Everyday familiarity collapses. *Dasein* becomes individualized, but as being-in-the-world. Being-in acquires the mode of not-being-at-home.”

In the moment of rupture that the *Augenblick* represents, the “there” (or the “here”) of the world goes under. This corresponds to the fact that space has to be reduced to time, as the following paragraphs of *Being and Time* explain. Every place can constitute itself only inside a world, and the world can constitute itself only through the original temporality of the *Dasein*. If *Dasein* is translated as “here and now,” then, it is necessary to pay attention to the fact that the “weight” of the two terms is not the same, but the “now” prevails over the “here” and tends to let it “go under,” or at least to withdraw from it. This means that the possibility disclosed by “being here and now” is only an internal one: it concerns only the “now,” while the world outside (the “here”) is left to itself.

Walter Benjamin

Walter Benjamin is a German philosopher who lived in the same period as Heidegger. His thought, nevertheless, is very different from that of the latter, even opposite from certain points of view, to the point that Benjamin once declared his intention of “destroying the Heidegger” (Benjamin 1982). Like Heidegger, Benjamin thinks of

the moment (which he calls the “now”: “Jetzt”) as an interruption of the normal course of time. The nature of this interruption, however, is completely divergent from Heidegger’s and opens up a very different way of relating to the question of the possible and possibility. It is not by chance that this interruptive instant is called “jetzt” by Benjamin, which is the name that Heidegger gives to the inauthentic time, as noted above. In fact, Benjamin’s “now” does not prevail over the “here” of the everyday world, as Heidegger’s *Augenblick* does. Rather, it is deeply intertwined with the “here.” In Benjamin’s thought, “here” and “now” pass one into the other in some ways and this opens up a very particular relationship to the question of possibility, as it will be shown.

Benjamin’s use of the expression “here and now” refers to the “aura” of the artwork (Benjamin 2008). The “aura” is the “here and now” of an artwork (ivi), its “unique” and unrepeatable appearance. Benjamin’s famous thesis is that when art, with the advent of photography and film, becomes reproducible, its “aura” declines. This is not something negative, according to Benjamin. On the contrary, it has a liberating aspect. The decline of the “aura” coincides with a decline of the idolatrous aspect of the artwork, that is, the appearance of the artwork as something that can neither be changed nor criticized. The decline of the aura opens up a new “space of play” in which every appearance can be transformed and again called into question at every moment.

This contributes to highlight the more positive idea of “here and now” that can be found in Benjamin’s work. In order to understand this second idea of “here and now” and the new possibilities that it implies, it is useful to begin with Benjamin’s concept of the “now.”

Benjamin gives his first interpretation of the “now” in a fragment of circa 1920 (Benjamin 1991, pp. 45–46). Here, Benjamin speaks of a “now of recognizability” (“Jetzt der Erkennbarkeit”). The world, Benjamin explains in this text, cannot be known in an a-temporal way. Human knowledge of things has a moment, a determinate “now,” in which these things can be known. It is necessary to destroy the illusion of the “atemporal value” of things and to show how they

“constitute themselves” only in the moment (“the now”) of their recognizability.

The “now of recognizability,” therefore, is a “logical time” (ivi). This is a very important aspect: the moment of which Benjamin speaks is not simply something that happens, according to the natural course of time; it is a moment *of knowledge*. Knowledge, in some way, freezes the usual course of time and gives birth to a moment in which things have a particular aspect. The presence that the “now” allows, therefore, is the presence of knowledge to itself. This marks an important distinction from the interpretation of the “here and now” that will be given, for example, by Jacques Derrida, which will be considered shortly.

In this arrest that the “now of recognizability” permits, time and space transform one into the other. This is also something that already emerges in Benjamin’s early work, long before his more famous idea of “dialectical image.” In *The Origin of German Trauerspiel*, the baroque drama (the “Trauerspiel” of the title) is intended precisely as a representation of time (human history) as space (the theatre scene) (Benjamin 2020). To freeze time and to make it become space, or image, is a necessity for knowledge. On the other hand, this can happen only for an instant, because every image that can be had of the world is incomplete and awaits another image.

This instantaneous character of knowledge is what Benjamin expresses in his famous idea of the “dialectical image.” In the dialectical image, Benjamin writes, past and present come together “in a flash”: “It is not that what is past casts its light on what is present, or what is present its light on what is past; rather, image is that wherein what has been comes together in a flash with the now to form a constellation” (Benjamin 1999, p. 463). This instantaneous unity between present and past is also a very relevant aspect of Benjamin’s idea of the “here and now.” In fact, what Benjamin wants to say is that there is not one “real” image of the past. Rather, past is an infinite source of possibilities, which can and must be grasped in the present.

In the “here and now” of the dialectical image, therefore, different temporal dimensions converge and transform each other, giving birth to a

complete, albeit fugitive, presence. Yet why is the past so important in relation to Benjamin’s idea of the here and now? It is in relation to this question that Benjamin’s idea of the “here and now” also acquires an ethical value. Benjamin’s idea is that all that has been forgotten and misrecognized in the past awaits justice in the present. He writes, therefore, that “our coming was expected on earth” (Benjamin 2006, p. 290; see Desideri 2015). This has to do not only with the historical past, but also with the past of our everyday perception of the world. There is so much in what we perceive, much more than we can tell and express every time. Therefore, it is necessary to go back to it and do justice to what has been forgotten or misrecognized. Also, the fact that this past we must return to is waiting for us is very important in relation to the issue of the possible, because it means that the possible is already there, and it is our duty to give voice to it.

Benjamin calls “Messianism,” this idea of a redemption of the past in the present. The word comes, of course, from the Jewish tradition, to which Benjamin, as a German-Jew, belonged. The reference to a Messiah, however, must not call to mind a salvation that comes at the end of time, beyond history. In fact, the salvation of the past takes places at every moment again.

Derrida

Jacques Derrida is one of the most important philosophers of the second half of the nineteenth century, father of the so-called “Deconstructionism” (see Norris 2002). Derrida’s investigation of the “here and now” takes up, in a certain measure, the critique of Heidegger to the inauthentic present and transforms it in a very interesting way (on Heidegger’s influence on Derrida see Spivak 1976). Heidegger’s idea, as noted above, was that humans tend to remove the present’s connection to the past and the future, in order to *make* everything *present* and manageable. This way they misrecognize an important difference: the difference between the *beings* and the *being*. Derrida refuses Heidegger’s idea of being: there is not such an original plenitude of being that precedes the unstable life of beings and that can be attained through the choice of a more authentic existence

(what the Heideggerian *Augenblick* permits, as noted above). However, there is indeed a tendency, within the history of philosophy, to give a primacy to the dimension of the present over past and future, and to the presence over the absence. This is what Derrida calls the “metaphysics of the present.” The first move of Derrida’s philosophy, therefore, consists in a critique of the “now.” There is a second move, however, that implies a recuperation of the “here and now,” in a different sense. In order to understand Derrida’s idea of the “here and now,” and its connection to the issue of the possible, it is therefore necessary to divide the analysis into two points: a. the critique to the metaphysics of the present and b. the importance of the “here and now.”

a. *The critique to the metaphysics of the present.* A fundamental point of departure for Derrida’s critique of the “now” is an essay by Edmund Husserl entitled *The Phenomenology of the Internal Time-Consciousness*, published in 1929. In this text, the German philosopher investigates the temporal structure of experience. According to Husserl, the “now” can never be isolated from the past and the future (Husserl 1964, §19). The image that Husserl uses to represent the present is that of a comet with its tail: the “now-apprehension is [...] the nucleus of a comets tail of retentions” (Husserl 1964, §11). This is something that becomes very important for Heidegger, as noted above, who calls this “extended” structure of time its “ecstatic” character. What Derrida focuses on, however, is the fact that the present remains, nevertheless, the prominent dimension of Husserl’s analysis. It could not be otherwise, because Husserl’s phenomenology is intended to be an analysis of the “phenomenon,” that is, what immediately appears to conscience, before being elaborated upon in language and in memory. The “living present,” therefore, is conceived as the center from which all memories and expectations are organized, their “*source-point*” (ivi; italics mine).

In order to maintain this primacy of the “now,” Husserl makes a very precise distinction between “retention” and “representation,” that is, between the immediate sensory traces and the reproduction, after longer time, of what was perceived.

Derrida’s move consists in showing that such a “radical difference” does not exist. To perceive is already to retain, because what is perceived is not there anymore. This is a consequence, according to Derrida, of what Husserl himself has shown, when he explained the “continuity” that exists between “the now and the not-now, perception and non-perception” (Derrida 1973, pp. 64–65).

To discover this presence of an absence inside presence itself is very important, from a philosophical point of view, because the entire history of philosophy is characterized, according to Derrida, exactly by this “privilege of a present-now,” as an attempt to find an “origin” or “foundation” (Derrida 1973, p. 61). Derrida applies this type of analysis to a number of great thinkers, like Plato, Rousseau, Lévi-Strauss, and Hegel. He intends to show that every time these authors searched for the present (the “now”), they found also the absence (the “not-now”) and the link between presence and absence. This is crucial, according to Derrida, because precisely this link between presence and absence is the locus of a generative movement. It is from the connection between the presence of the sense and its absence that a new sense can arise time and again. In this way, it is possible to come closer to the second movement in Derrida’s interpretation of the “here and now,” the one that implies a valorization of this concept.

b. *The valorization of the here and now.* In order to understand this passage from a critique of the “now” to the importance of the “here and now,” it is useful to briefly consider Derrida’s idea of writing. The privilege of the present inside the history of philosophy expresses itself very clearly in the primacy of speech over writing. Speech has always been privileged over writing because it gives the impression of an immediate link between sound and meaning, signifier and signified. Writing deconstructs this illusion and introduces an element of indecidability within language: “Writing displaces the proper place of the sentence, the unique time of the sentence pronounced *hic et nunc*” (Derrida 1998, p. 281).

One of the main and most well-known concepts through which Derrida has expressed this displacement of meaning is that of “différance,” which means at the same time “difference” and

“deferral.” Différance does not simply indicate the system of differences that constitutes language – according to the idea of structuralism, which is another important point of departure for Derrida’s critique – but it is also the “*generative movement*” that gives birth to them and puts them in motion again and again (Derrida 1982, p. 27; italics mine).

There is, therefore, a temporal moment in which differences and, consequently, meaning emerge. This is the “here and now,” the necessity of which Derrida underlines. One of the main messages of his philosophy, in fact, is that it is not possible to gather the meaning of something once and for all (as the metaphysics of presence would like to do). For exactly this reason, it is necessary to return to things in their singularity every time, to go back to their “here and now”: “No différance without alterity, no alterity without singularity, no singularity without *here and now*” (Derrida 2006, p. 37: my italics). On the other hand, since every present is essentially inhabited by an absence (“haunted” by it, as Derrida writes in *Spectres de Marx*), what can be discovered in the “here and now” is necessarily something that is not yet there: a “here, now, tomorrow” (ivi, back cover). In this way, the idea of “here and now” acquires a new character. While the “here” remains a “here” – marking the importance of singularity, as a locus of meaning that must again be questioned time after time – the “now” becomes a “now and tomorrow”: a present that is at the same time an absence and a future. An “impossible” that is the only “condition of possibility” (Derrida 2005, p. 47; see also Derrida 1992).

Jean-François Lyotard

Jean-François Lyotard has become famous as the philosopher of Postmodernism (see Lyotard 1984). In his investigation of the concept of the sublime, Lyotard proposes what he considers as a radically new interpretation of the “here and now” (Lyotard 2012; see also Lyotard 1994, 1999). He starts considering the titles of a number of works by the American painter Barnett Newman, who worked on the representation of the sublime (one of his works is called “Vir Heroicus Sublimis”;

see also Newman 1991), and he notices that the expressions “here” and “now” recur many times. There is a connection, therefore, between the experience of the sublime and the “here and now.” How is this connection to be understood?

The sublime is an aesthetical category that was elaborated upon during the eighteenth century, when an ancient essay by a certain Pseudo-Longinus entitled “Peri Hypsous” (“On the sublime”) was translated into French by Nicolas Boileau (see chapter ► “Aesthetics”). From that moment on, a great discussion arose on this concept. The sublime became something different from and even opposite to the beautiful, because it implied not only a sensation of pleasure, but also an impression of fear and pain. Sublime is, for example, the infinite darkness of night, or the spectacle of a terrible event, like a shipwreck. According to Immanuel Kant, from whom Lyotard’s analysis begins, the sublime has to do with “something that can’t be shown or presented” (Lyotard 2012, p. 531; Kant 2009, § 23). How can it be connected, therefore, to the “here and now”?

Lyotard’s answer is that what cannot be shown or presented is precisely the “here and now.” The “here and now” is the fact that something happens, and this fact precedes every knowledge that anyone can have of “what” happens: “The inexpressible doesn’t reside in an over there, in another world or another time, but in this: in that something happens” (Lyotard 2012, p. 533; see also Lyotard 1989, p. 247). The fact that something happens is beyond the reach of human thought. Therefore, Lyotard writes that the “here and now” is “a stranger to consciousness” (Lyotard 2012, p. 531).

The task of art is to “bear witness” to this inexpressible fact, the fact that something happens (ivi: 533). What happens, in this case, is the painting: “Here and now there is this painting, rather than nothing, and that’s what is sublime” (ibidem). It is in particular the art of the Avant-garde that shows, according to Lyotard, this inexpressible character of the event: “guarding the occurrence ‘before’ any defense, any illustration, and any commentary... this is the rigour of the Avant-garde” (ibidem). The “here and now” that art

brings to light, according to Lyotard, is what comes “before” thought and before conscience. Therefore, the “here and now” has an *interruptive* character, it breaks every flow of time and interpretation: “Presence is the instant which *interrupts* the chaos of history and which recalls, or simply calls out that ‘there is’, even before that which is has any signification” (Lyotard 1989, p. 247, my italics).

Is it really possible, however, to divide this moment that comes “before” knowledge from its subsequent elaboration into form and conscience (see on this Benjamin 2015)? And moreover, doesn’t this attempt to divide the two moments imply the risk of hypostatizing this arising moment, of fixing what cannot be fixed, of giving a name to what does not yet have a name? It will be necessary to return to these questions in the next section.

Conclusion: Here and Now and the Possible

Some general traits of the “here and now” can be drawn from the philosophical interpretations of it that have just been considered.

First of all, as has already been noted about the Latin “*hic et nunc*,” the here and now marks the moment and the space of a *task*, which shows itself with *urgency*. The “here and now,” then, is not something that is already there, as it is said in some trivial versions of popular wisdom (“don’t worry too much and just live here and now. . .”). The “here and now” is a possibility that has to be grasped, with effort and commitment. This is also evident from the character of rupture attributed to the “here and now” in all considered authors. The “here and now” breaks with the normal course of time (see on this Friese 2001). For this aspect of change and subversion, the here and now has a connection to the concepts of creativity and awe (see corresponding sections).

This exceptionality, however, must not lead one to think of the “here and now” as just a single, or rare, isolated moment. This misunderstanding applied very often, for example, to Walter Benjamin’s idea of “*jetztzeit*” (see for ex. North 2018). The *jetztzeit* (and so the “here and now”) can and

must take place at every moment and in every place. Creativity and change are something that must concern every instant and every aspect of life. This does not mean that the possibility opened up by the here and now is warranted. As Benjamin shows, the here and now is at the same time something that must be grasped with intellectual effort and tension and something to which a person must be open and that she must be ready to find on her way. Both attitudes are necessary: control/commitment and abandon/receptivity; their unity is necessary (see on this the chapter ► “Aesthetics”).

Another important trait that was confirmed by the analysis of these different interpretations of the “here and now” is the relevance of the “here.” This means that the “here and now” is not a purely internal moment (where time is something merely internal to the subject), but it is something that has to do with one’s relation to an external world. This is a necessary condition if one does not want to subsume, as Heidegger does, the “here” under the “now.” The possibility that the “here and now” involves is a possibility that concerns the human relationship to the world.

Another question arises from the philosophical interpretations of the “here and now” that were previously considered. The relationship between the here and now and the possible, the new chances opened up by this time of rupture, has been analyzed. Yet in some of the considered authors, the here and now seems to also have a relationship to the *impossible*. It is the case, as noted above, of Derrida’s philosophy, according to which this moment of change and attention is an “impossible possibility.” However, this is not the only viable interpretation of the link between possibility and impossibility that characterizes the here and now. According to Benjamin, for example, the here and now is the moment of a very present chance, which is indeed inexhaustible – therefore every “here and now” has to give way to other moments/spaces of realization.

One more issue is the relation that the “here and now” has to thought and knowledge. There is an element of immediacy in the here and now and in the possibility that it discloses. It is this immediacy that makes Lyotard state that the “here and now” precedes every attempt to express it through

language and meaning. Is it really possible, however, to think of the here and now as something that precedes thought? Or is it rather the opposite, and thought should be considered as always having a relationship to something that it does not control, with a “here and now” that constitutes its limit but also its greatest condition of chance and possibility?

Cross-References

- ▶ Aesthetics
- ▶ Awe
- ▶ Creativity
- ▶ Meditation

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Heuristics

Enrico Rubaltelli

Department of Developmental Psychology and
Socialization, University of Padova, Padova, Italy

Abstract

Heuristics are strategies that allow individuals to reach a conclusion for themselves or to fill a gap when information is not available. In the past 25 years or so, the empirical study of heuristics showed that these strategies are ingrained in the functioning of the human brain and central to processes like problem-solving and judgment and decision-making. As a result, heuristics have become a fundamental feature of psychological theories and challenge the traditional vision of analytical, rational thinking and information processing that was proposed in other disciplines (e.g., economics). Past research has shown that there is an array of heuristics that individuals employ to cope with the complexity of the environment in which they are living. These strategies allow to make quick evaluations of events and stimuli that can inform decision-makers about what to do when the outcomes are uncertain, information is incomplete, or time is constrained. Heuristics are also instrumental to save cognitive resources by engaging in a tradeoff between the quality and the effort required to make a decision. A consequence is that heuristics can bias thinking and reasoning, although they are also instrumental to allow the human brain to react with high flexibility and speed. The debate is still open on whether the impact of heuristics on our reasoning is positive or not, and a wide range of debiasing techniques has been developed over the years (228).

Keywords

Heuristics · Decision-making · Judgment · Bias · Thinking · Reasoning · Intuition

Introduction

Despite what most laypeople believe, human **decision-making** is not always driven by **conscious** thinking and is often impacted by cognitive limitations and environmental constraints. As a result, the impact of **unconscious** processes becomes pervasive in many contexts (Kahneman 2011).

Heuristics have been found to be important, intuitive strategies that people use when making **judgments** and processing information. Although the term was introduced by Simon (1990), it became widely used in psychological literature thanks to the work of Tversky and Kahneman. These authors were the early proponents of the heuristics and **biases** program and defined heuristics as strategies that “reduce the complex task of assessing probabilities and predicting values to simpler judgmental operations” (1974, p. 1124). Similarly, the Oxford English Dictionary defines heuristics (in psychology) as: “designating or relating to **decision making** that is performed through intuition or common sense.” Research on heuristics has now spread to many different fields beyond cognitive sciences and psychology. The early research on heuristics has been applied with important implications in disciplines like finance (Hirshleifer 2015), medicine (Stiggelbout et al. 2015), law (Brest and Krieger 2010), policymaking (Thaler and Sunstein 2008), and **risk** perception (Slovic 2000) among many others.

There are several ways in which the study of heuristics connects with the investigation of the possible. Certainly, heuristics contribute to people’s subjective perception of the world and their lives. Similarly, heuristics impact the way people assess the outcomes of their choices and the chances they have to achieve them in the future. In a sense, since heuristics processing is quick, intuitive, and based on our experience, it creates different possible worlds and perceptions depending on who is assessing a particular situation. Different individuals may hold different beliefs or opinions even when the information is the same. However, we also know that heuristics

lead to systematical biases that may actually get people stuck on a specific worldview and, to some extent, unable to fully explore other possibilities.

The next section provides a theoretical and historical background explaining how psychologist came to realize the role of heuristic in human **decision-making**. Subsequently, an overview of the main heuristics will be provided, followed by a brief review of research in fields outside psychology (e.g., finance, law, and medicine). Finally, the concluding remarks will provide a brief overview of **debiasing** techniques.

Theoretical and Historical Background

For a long time, researchers focused on how people process and use information in order to make optimal decisions. Critically, this approach was based on the assumption that decision-makers were weighing information and applying **conscious deliberation** to choose the alternative with the highest **expected value**. Economists were at the forefront of this approach devising a set of principles that individuals should follow in order to maximize **expected value**. Although these principles required exceptional computational skills, it was assumed that people were deciding “as if” they were complying with them. As a result, decision quality was measured by looking at people’s choice regardless from the correctness of the procedure followed to reach it.

This approach was challenged by Simon (1990) who proposed the concept of “**bounded rationality**,” referring to the fact that decision-makers are often constrained by several factors, such as limited cognitive resources, incomplete information, and time pressure. Simon’s work contributed to shift the focus of research more on the procedure followed by decision-makers rather than just the correctness of their choices. Within this framework, he proposed the “**satisficing principle**” whereby individuals make a tradeoff between the quality of their decisions and the effort required. In other words, because of cognitive and environmental limitations, decision-makers explore the possible

alternatives to a problem up to the point in which the effort required to search for additional information exceeds the possible improvement in the quality of the decision.

Subsequently, the term **heuristics** was used by Tversky and Kahneman to refer to the intuitive strategies people use when assessing probabilities and outcomes (see Gideon and Teigen 2004). Like in Simon’s approach, Tversky and Kahneman showed the existence of a series of strategies that humans use, mainly in an intuitive way, to simplify judgments that would be otherwise too complex or require too much time to retrieve all relevant information. However, on many occasions, these simplified strategies are generalized even to situations in which the decision-maker could use rather straightforward statistical or logical principles. Initially, Tversky and Kahneman described three main **heuristics**: **representativeness**, **availability**, and **anchoring** and adjustment.

Representativeness Heuristic

People use the **representativeness** heuristic when they have to determine whether a stimulus A belongs to the category B or whether the event A has originated from process B (Tversky and Kahneman 1974). To answer this type of questions, people look at how representative event A is of process B (or category B). Instead of using actual probabilistic information, they use similarity as a proxy of the relationship between two events. If A closely resembles the prototypical exemplar of category B, it is inferred that it must belong to that category. Several examples of **representativeness** have been reported. Empirical research has shown that, because of the **representativeness** heuristic, people become insensitive to base rate frequency. In an early study, Kahneman and Tversky presented the description of a fictitious graduate student (Tom W.). A first group of participants, who was not presented with the description, was asked to rank order nine fields of study based on their best guess of the percentage of students enrolled in the first year of graduate

school (base rate group). A second group was presented with the description and asked to rank order the nine fields of study in terms of how similar a typical student in each of them was to Tom W. (similarity group). Finally, a third group was asked to rank order the nine fields of study based on the likelihood that Tom W. was a graduate student in each of them (prediction group). Results showed that participant's predictions were more closely related to the results found in the similarity group than in the base rate group. In other words, answers in the prediction group were overly influenced by the description of Tom W., whereas the distribution of students across the different fields of study was not used to predict which program he was enrolled in.

A second important implication of the **representativeness** heuristic is people's insensitivity to sample size. Based on this effect, decision-makers tend to apply the rules of probability even to samples that are too small in size, hence not representative of a population. For instance, the average height of a sample of ten men will be judged based on the average height in the population of men. However, ten men are a very small sample and not representative of the whole population. As a result, the average for that sample is likely to diverge compared to the average found in the population. Kahneman and Tversky presented three groups with the question regarding the likelihood to find an average height above 6 ft in a group of men. Each group was provided with a different sample size: 1000, 100, or 10 men. Results showed that sample size had no effect on responses to a question asking the probability of obtaining a height above 6 ft (Tversky and Kahneman 1974). The **representativeness** heuristic leads also to misconceptions of chance. For instance, when tossing a coin, people consider the sequence H-T-H-T-T-H to be more likely than H-H-H-T-T-T, since it resembles more the characteristics of a random series of events. However, for every coin toss, there is always a 50–50 chance to get either heads or tails. As a result, in a short series of tosses, it is entirely possible to get several heads or tails in a row,

despite the fact that a similar sequence of events does not resemble our intuitive idea of randomness.

Although the **representativeness** heuristic can be a good approximation of the correct answer in many contexts, it can lead people to feel overconfident about their inferences (Tversky and Kahneman 1974). This happens because probabilities are almost completely assessed based on the degree of similarity between the stimulus (e.g., Tom W.) and the category (e.g., his field of study), with little consideration for base rates or sample size. Finally, **representativeness** can lead people to be unaware of regression to the mean. This principle states that extremely positive or negative events, once they are measured again, are likely to converge toward the mean value for their population. However, people tend to infer that an extreme event is representative of an extreme phenomenon. When thinking about climate change, individuals may find difficult to understand that global temperature is increasing because not every day the weather is warmer than usual. Because of regression to the mean, after a very hot day or week, it is likely that the temperature moves back toward the mean.

Availability Heuristic

Availability is used to judge the frequency of an event and is based on how easy it is to retrieve instances of that event (or similar ones) from memory. This heuristic works particularly well when people assess the frequency of events they are familiar with. However, it can lead to mistakes when applied to events that are not well known (Tversky and Kahneman 1974). The **availability** heuristic has a significant impact on people's **risk** perception. On the one hand, if many instances of a disease (e.g., friends that suffered of cancer, news in the media, and so on) come easily to our mind, then we will be likely to overestimate its rate of occurrence in the population. On the other hand, if we find it difficult to come up with instances of people who died struck by lightning, we will underestimate this cause of death. Research showed that the ease with which

instances come to mind is influenced by familiarity with the event, but also its salience (e.g., seeing the event first hand rather than being exposed in the media) or recency (e.g., being directly or indirectly exposed to a recent event).

An implication of the **availability** heuristic is that decision-makers can be sensitive to what Tversky and Kahneman call “the effectiveness of the search set.” In a study, people were asked to judge whether it was more likely for an English word to start with “r” (e.g., read) or to have “r” as the third letter (e.g., more). When confronted with a similar question, people try to retrieve from memory words starting with r or having r as the third letter. Since it is easier to come up with words that start with a specific letter, participants judged words with r as the first letter more frequent than words with r as the third letter (although the opposite is actually true). Finally, two additional implications of the **availability** heuristic are **biases** of imaginability and the illusory correlation. In many occasions, people must assess the frequency of events by imagining examples of these events. For instance, an entrepreneur may want to assess the likelihood of potential risks that could impact his/her business. To do so, he/she must first come up with a list of those events. Likely, the list will include risks that came up easily in the entrepreneur’s mind, and these will be considered more likely to happen than those he/she had more difficulty to imagine. Finally, illusory correlation regards the assessment of co-occurring events (Chapman and Chapman 1967). According to Tversky and Kahneman (1974), the **availability** heuristic induces people to perceive illusory correlations based on the strength of the association between co-occurring events. When the association comes up easily in people’s mind, they are likely to see a correlation and to infer a correlation between the events.

Anchoring and Adjustment Heuristic

The third heuristic described by Tversky and Kahneman (1974) is **anchoring** and adjustment. This heuristic is used when people are asked to

make an estimate. On these occasions, decision-makers often anchor their response to a specific value and adjust it toward what they think the correct answer should be. For instance, imagine the questions “Was Gandhi more or less than 144 years old when he died?” and “How old was Gandhi when he died?” When people are answering to the second question, the number presented in the first question primes them and leads them to think about it. They then adjust their response in the direction of what they think is the correct answer and stop once they are unsure whether it is safe to move further away from the anchor or not.

Anchoring is an interesting heuristic since it involves different processes depending on how estimates are elicited. The **anchoring** and adjustment process described above is based on an intuitive adjustment process, but researchers have demonstrated that **anchoring** can arise from deliberative thinking as well (Epley and Gilovich 2006). When people are asked a question like “What is the boiling temperature of water at the top of Mount Everest?”, they easily self-generate and anchor (e.g., water boils at 100 °C). They also understand that this anchor is wrong, since water boils at a lower temperature at altitude than at sea level. Therefore, when answering such a question, people engage in a deliberative thinking process whose goal is to find arguments in favor of moving away from the anchor. When they do not find any additional argument to move further, they stop and infer that the correct answer is the value they have reached.

Affect Heuristic

Following Tversky and Kahneman seminal work, other **heuristics** have been described in the literature, some of which will be mentioned in the next section. One important, intuitive strategy that has been proposed more recently is the **affect** heuristic (Slovic et al. 2002). This heuristic showed to be relevant both because it advanced our understanding of how people make decisions and because of the applied implications it spurred (Kahneman 2011).

According to the **affect** heuristic, “representations of objects and events in people’s minds are tagged to varying degrees with **affect**” (Slovic et al. 2002, p. 400). For instance, Slovic and colleagues found higher ratings of attractiveness for a gamble offering 7/36 to win \$9 and 29/36 to lose 5¢ than for a gamble offering only a gain (7/36 to win \$9). Similarly, only a minority of participants chose to play the gamble offering only the win, whereas the majority chose to play the gamble offering both the win and the small loss. In other words, the decision to play the gamble was influenced by how attractive people perceived it. Specifically, these findings are interesting because a small loss made the win easier to evaluate and, consequently, induced people to experience a more positive feeling than when the 5¢ loss was not present.

Research on the **affect** heuristic has shown that people perceive **risk** based on their affective reactions toward specific events (e.g., terrorist attacks), substances (e.g., pesticides), or activities (e.g., mountaineering). In particular, these findings have shown consistently that individuals perceive a negative correlation between risks and benefits. On the one hand, high benefits induce positive affective reactions and, as a result, to infer that **risks** are low. On the other hand, high **risks** induce negative affective reactions and, as a result, to infer that benefits are low. For instance, a person who supports building a nuclear power plant in their country would likely see this source of energy as associated with high benefit (e.g., cleaner than coal) and low **risk** (e.g., the last generation of nuclear reactors is very safe). However, a person that opposes the construction of the nuclear power plant is likely to see high **risk** (e.g., even small accidents can have huge consequences) and low benefit (e.g., there are other ways to produce clean energy). Finally, people’s judgments and behaviors do not depend exclusively on the valence (positive or negative) of the feelings they experience toward the mental image of a stimulus but also on the precision of such image. As a result, activities that are easy to imagine, familiar, or widely reported in the media are more vivid and induce stronger affective reactions, therefore impacting

behavior in a more decisive way (Slovic et al. 2002).

Applied Work on Heuristics

Work on **heuristics** and **biases** has been central for the application of psychological research to many domains outside psychology. As a result, it seems important to briefly describe some of these applications as well as specific **heuristics** that this research allowed to identify.

Economics was one of the first fields to be influenced by Kahneman and Tversky’s work, mainly thanks to a host of authors who realized the importance of incorporating human psychology in fields like consumer behavior, management, and finance. Together with other findings in psychological research (e.g., prospect theory; Kahneman and Tversky 1979), the study of **heuristics** in the economic field led to the emergence of disciplines like **behavioral economics** and **behavioral finance** (Hirshleifer 2015).

In finance, **heuristics** have been shown to influence investors’ decisions regarding buying and selling stocks or how to manage their portfolios. Among the **heuristics** described so far, **availability** can be identified when people invest in familiar companies, famous brands, or companies that have been praised frequently in the media. In contrast, investors tend to avoid stocks that do not come easily to their mind. Furthermore, investors may expect that investing in a large, popular company should yield high returns just because it is representative of a successful business (Shefrin 2002). However, small companies may yield higher returns than large ones because they are riskier. Consistent with this conclusion, many investors tend to perceive a negative correlation between **risk** and returns in the financial markets, although one of the most famous rules of finance is the positive correlation between risk and returns (on long time horizons, investors should be rewarded for taking a risk). Similarly, people are more likely to invest in admired companies because they associate them to high expected returns and low **risk** (Statman et al. 2008).

Finally, portfolio diversification is often made naively, and some authors have demonstrated the existence of a **1/n heuristic**. This heuristic suggests that investors divide their portfolio in equal parts regardless of the number of alternative investments they are offered. If there are only two funds, they will invest 50% of the portfolio in the first fund and 50% on the second. However, if the funds available are four, they will invest 25% of the portfolio in each of them (Thaler 1999). Other **heuristics** similar to the 1/n have shown how difficult it is for investors to understand portfolio diversification. This difficulty makes also investors vulnerable to potentially irrelevant factors such as the array of alternatives they are presented with. Finally, in financial markets, reliance on the **anchoring** heuristic is a pervasive strategy since one of the main tasks of investors is to predict future values. They accomplish this task by **anchoring** their estimates to the current values of the market, although this is not necessarily a good strategy (Kahneman 2011).

Heuristics have also been shown to have a significant impact on the way people assess risk. As stated above, the **affect** heuristic is responsible for people's inference that **risk** and benefit are negatively correlated (regardless from whether this is actually true or not). Furthermore, some stimuli are more representative of a **risk** than others (e.g., explosions vs. air pollution). Similarly, instances of vivid events (e.g., terrorist attacks) are more easily recollected from memory, leading to an overestimation of their frequency and consequences. In addition, many people are influenced by an optimistic bias (Slovic 2000) and believe that a particular negative outcome will not happen to them. For instance, they may find justifications to rationalize why a tornado will never hit their town despite the fact that a nearby one was hit recently. Finally, people evaluations are influenced by how they think about a **risk** that has a cumulative effect on their health. For instance, it makes a difference if people judge the **risk** of smoking by assessing it one cigarette at a time rather than considering the cumulative impact of all the cigarettes they smoked in the last 10 years (Slovic 2000). In this latter case, individuals are

more likely to realize how big a **risk** they are facing.

In law, several of the classical **heuristics** have been identified. For instance, litigations are a natural setting in which the **anchoring** heuristic is used (and studied; see, Guthrie et al. 2001). Research have shown that people are more likely to accept a \$12.000 final settlement when the starting offer was \$2.000 rather than \$10.000. This is because the low initial offer makes the final amount of money look more generous compared to when the litigation started from a higher offer. In other words, people do not evaluate the final offer based on its absolute value but in relation to a reference point they are anchored to. Similarly, studies with mock juries found that judges award a significantly higher amount of money when the request from the plaintiff's lawyer is \$500.000 rather than \$100.000. As a result, even the request of silly damages can have an effect on the decision of the judge. This should not happen because judges should award damages based on the case at end rather than **anchoring** their decision on the request from the plaintiff's lawyer. In this domain there are also numerous demonstrations of the **representativeness** heuristic like in cases when judges seem to have a preference for individuating evidence (e.g., eye witness testimony) rather than statistical evidence (e.g., base rates; Guthrie et al. 2001). Furthermore, in court, base rates are often neglected when assessing scientific evidence. For instance, when a scientific test indicates that there is only a 3% chance of an error, most people are inclined to think that the suspect must be guilty. However, the relevance of this information depends on the dimension of the population. For instance, 3% in a population of 4 million people corresponds to 120,000 individuals. It is hard to find the suspect guilty when there are so many other individuals who could have been responsible for that crime (assuming that no additional information is available).

Finally, a large body of work showed how **heuristics** influence judgments of both doctors and patients (Stiggebout et al. 2015). Furthermore, research has showed specific intuitive strategies related to how people perceive pain. Redelmeier and Kahneman (1996) proposed the

peak-end rule, suggesting that people judge the total pain experienced during a painful medical exam (e.g., colonoscopy) by recollecting the most painful moment of the procedure and how they felt toward the end. This heuristic has the striking consequence that increasing the length of the colonoscopy by adding a low pain stage at the end makes people recall it as less unpleasant. This happens despite the fact that the actual pain is higher for the longer procedure than for the shorter one, when it is measured asking the patient, every 60 s, how much pain he/she feels.

At the applied level, the study of heuristics is tied closely with the investigation of the possible. Depending on what is more accessible in people's minds and depending on their experiences, some alternative worldviews or perceptions of the self will be more likely than others. As a result, we can conclude that these psychological processes shape people's perception of complex events that are happening in the world around them (or thoughts they have in mind). As a result, they become the starting point people use to explore the possible, be it alternative futures (e.g., how do I feel about the stock market? Will it go up next year?), or alternative pasts (e.g., what if I accepted that work abroad when I was younger?), and so forth. Intense positive feelings may provide an affective tag to assess future possible events and make them look better or more likely than they actually are. Similarly, if several examples of a negative event come easily to mind, a person may conclude that a different choice would have yielded a worse outcome than what had actually been done. In both cases, people will be more likely to engage on specific dimensions of the possible future or past rather than others that do not elicit the same strong feelings or whose examples do not come to mind easily enough.

Conclusion

Although the literature on **heuristics** shows that people make many errors in their judgments, these strategies serve a purpose in helping people make quick evaluations about a world that is complex

and uncertain. More importantly, **heuristics** are not necessarily linked to errors in estimates but allow people to reach sufficiently good results on many occasions. The debate is still open on whether **heuristics** are mostly useful to make good decisions or mostly a source of errors and **biases** (Gigerenzer et al. 1999).

In any case, a large literature has investigated ways to debias people's judgments. Within the debiasing literature, the two main approaches are the following: (i) experts can help create decision contexts that are designed to improve decision quality (e.g., Thaler and Sunstein 2008); otherwise, (ii) it is possible to teach decision-makers a set of techniques to overcome heuristic thinking (Larrick 2004). This second approach is the most relevant here and relies on different debiasing strategies, such as motivational processes based on incentives or accountability and cognitive strategies to lead the decision-makers to use deliberative thinking (e.g., "consider the opposite"; use of frequencies rather than probabilities).

Debiasing techniques are also an interesting test ground to assess how heuristics influence people's thinking about what is possible. It would be interesting to assess how much these procedures can help individuals detach from their intuitions and investigate what is possible without constraints. We could argue that through debiasing strategies, individuals could be able to see solutions they were not thinking about (or were aware of) since the heuristic processing was leading them to follow familiar patterns. However, it could also be argued that when people are detached from their subjective experience and intuition, they may end up following a more standardized, "cold" thinking process that could lead to less variability in their behavior. If this is true, we may conclude that, on some occasions, debiasing techniques may be detrimental when the goal is to look at possibilities that lie outside the realm of current knowledge. In other words, it could be that, under similar conditions, heuristic processing, with its shortcuts and intuitive associations, could lead different people to see different alternative worlds therefore increasing the likelihood to achieve disruptive changes

that open the way for things that were previously unthinkable.

To conclude, **heuristics** are part of people's way of making judgments, and it is hard to avoid them even after being trained about the errors they may provoke. They help simplify difficult and uncertain decisions in order to make them manageable and avoid freezing when it is not clear what should be done (e.g., when facing an hazard or a difficult economic decision). In the end the questions could be "would we be better off without **heuristics**?" Regardless from the approach used to study this subject, most researchers would agree that **heuristics** serve an important purpose and are instrumental to our adaptation to the environment. Right now, humans do have problems coping with the complexity and uncertainty that characterize some problems and decisions (Kahneman 2011). Therefore, in some specific contexts where the stakes are particularly high, we must do even more to help people understand how to improve the quality of their decisions. To this end, **technology** can prove especially useful and, to some extent, has already offered important solutions to overcome the limitations of human reasoning.

Cross-References

- [Complexity](#)
- [Counterfactual Thinking](#)
- [Creativity](#)
- [Illusion in Perception](#)
- [Intentionality](#)
- [Perspective](#)
- [Probabilistic Thinking](#)
- [Simulation](#)

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Hope

Nauja Kleist
Danish Institute for International Studies,
Copenhagen, Denmark

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Definition

Hope and the possible are closely linked but the connection is complex. Feeling hopeful, hoping for something, or articulating hope reflects – or creates – a sense of the possible; that the hoped-for future, life, or phenomena is not out of reach, that it may happen. Hope is never certain, however, and does not equal possibility; it is related to anticipation and potential futures but is never granted. Rather hope is inherently disappointing. Studying hope and the possible is thus embedded in ambivalence and uncertainty.

In this entry, I discuss hope and the possible, with particular emphasis on anthropological and sociological studies. I start by outlining the concept of hope and its history in very brief terms and sketch the contours of current scholarship, followed by two sections on conceptualizing and searching for hope in times of crisis, respectively. I then turn to perspectives on governing hope and hopelessness and the relationship between societal and social hope(s), illustrated with examples from border control and West African high-risk migration and post-deportation life before I conclude.

A Long History and a Recent Revival

Exploring hope and the possible is a daunting exercise. Hope is used in everyday parlance, often casually, sometimes existentially. It has been conceptualized since (at least) the Greek antiquity, such as in the myth of Pandora, the

first human woman created by the gods who opened a jar of human evils that dispersed across the world while only hope remained inside the jar. In Christianity, hope is a central tenet, expressed in Paul's emphasis on faith, hope, and love while Aquinas identified hope as one of the theological virtues (Dalferth and Block 2016). While such Christian hope is a hope for salvation in the afterlife (Hage 2016), Immanuel Kant asked "what I may hope for," identifying three overall objects: one's own happiness, one's moral progress, and the moral improvement of mankind (Bloeser and Stahl 2017; McGeer 2004, pp. 100–101). Two centuries later, in the aftermath of the Second World War, Marxist philosopher Ernst Bloch articulated hope as "not-yet-become" and "not-yet-consciousness" in his magnum opus *The Principle of Hope* (1986 [1954]), emphasizing indeterminacy and anticipation (cf. Anderson and Fenton 2008; Thompson 2013).

Theorizing and contemplating hope has a long history, in other words. Nevertheless, the scholarship of hope has re-emerged and expanded dramatically within the last two decades. There is burgeoning literature within the social sciences, humanities, and social philosophy as well as in nursing, happiness economics, positive psychology studies, and indeed many other fields. Hope has been studied in, for instance, the history of home ownership in Hong Kong (Tsang 2021); as a technology of planning in Sheffield, England (Inch et al. 2020); post-disaster reconstruction in El Salvador (Sliwinski 2012, 2016); internally displaced persons in Georgia and asylum seekers in the Netherlands (Brun 2015, 2016; Ghorashi et al. 2018); literature analysis of *Middlemarch* (McGeer 2004); and the (short-lived) excitement about the Bosnian and Herzegovinian soccer team during the 2014 World Cup (Jansen 2016), to name just a few examples. In more quantitatively oriented work, hope indexes and hopelessness scales have been developed in nursing, psychiatry, and positive psychology to measure positive and negative expectations (Pleeging et al. 2021).

This proliferation of studies is also reflected in a range of review and state of the art articles that are currently emerging (see Cook and Cuervo 2019 on sociology; Jansen 2021 on anthropology;

Pleeging et al. 2021 for an interdisciplinary overview), handbook chapters (e.g., Kleist [forthcoming](#) on irregular migration), and encyclopedias and encyclopedia entries on hope and related phenomena, such as, indeed, “the possible.” In a recent review, Pleeging et al. (2021) identified seven overall themes and 41 subthemes in an analysis of 66 publications across traditional scholarly divides, while David Webb (2007) cited two studies from around the turn of the Millennium that counted 26 theories and 54 definitions of hope. Such exercises testify to the pertinence of the trope of hope today as well as the variety of how hope is perceived and employed.

Conceptualizing Hope

How, then, can we understand and define hope? This depends on the perspective and position taken. Within the broad field of anthropology, sociology, and other related disciplines, hope is generally approached as socially situated and contextual, shaped by – and engendering – the social imaginaries (Taylor 2004) that underpin our visions and perceptions of our lives and futures. Ernst Bloch’s *The principle of Hope* constitutes a continuing reference point, with its conceptualization of hope as an anticipatory consciousness toward the “not-yet-become” and as emerging conditions of the present (1986 [1954]). Bloch’s emphasis on “anticipation and the practical consequences of projections that simultaneously emerge in the present but point beyond it” has continued to shape scholarship on hope (Browne 2005 p. 68), even if Bloch’s explicit Marxist project is often ignored or downplayed (Jansen 2021).

Hope reflects a *sense* of the possible, in other words, but not necessarily what *is* or *will be* possible. After all, we only know the “not-yet-become” when it has become, so to speak. Elsewhere I have suggested an overall definition of hope as *anticipation of the future – or an elsewhere – that is characterized by potentiality but couched in uncertainty* (Kleist 2017b, [forthcoming](#)). We can be more precise, however, and distinguish between two overall modes of hoping: hoping for something specific and being hopeful,

what Webb (2007) has termed goal-oriented and open-ended hope. Anthropologist Stef Jansen makes a related distinction between the transitive and intransitive modalities of hope in the English language. The former concerns how “*hopes* for something or that something will occur” while the intransitive modality refers to how “the term ‘hope’ is used primarily to denote the affect of *hopefulness*” (2021, p. 2, emphasis in original; Jansen 2016). Julia Cook and Hernán Cuervo (2019) suggest the terms representational and nonrepresentational modes of hope, making a similar distinction between hoping for specific futures and affects and sensations of hope that do not revolve around a specific referent or object. They further emphasize that these modes of hope are not mutually exclusive or contradictory but “reflect multiple inherently connected modes, each of which is liable to shift into another” (2019, p. 1113). This point also problematizes discrete distinctions between hope as either inherently passive or active (*ibid.*, pp. 1006–1007; cf. Zigon 2009).

Whether hoping is perceived or experienced as an activity, a state, or an affect, the act of *hoping* takes place in the present. Hoping thus has a temporal dimension but not a fixed one. As Cook and Cuervo suggest, representational hope (or goal-oriented or hoping in its transitive form) is always future-oriented while nonrepresentational (or open-ended or hoping in its intransitive form) may be directed toward the present as well to cope with difficult circumstances. Such emphasis on hopefulness in the present is also central in Hirokazu Miyazaki’s works (Miyazaki 2004, 2006). Inspired by Bloch, Miyazaki calls for temporal re-orientation and the re-imagining of “the present from the perspective of the end” (2006, p. 157), where hope constitutes prospective momentums or is experienced as “sparks” (see also Haugen 2017; Pedersen 2012). Here hope (or rather hoping) becomes a practice or work.

Searching for Hope in Time of Crisis

Rather than settling on a specific theory or conceptualization of hope, I suggest it is more

productive to pay attention to the intensities, pluralities, and scales of hope and the modes of hopefulness (cf. Jansen 2021). I thereby approach hope as a relational and spatiotemporal phenomenon that is socially and contextually situated (cf. Webb 2007). This implies that hopes and hopefulness have histories and trajectories (Kleist and Jansen 2016) and that the conditions of possibility and political economy that engender or underpin them are important to consider. We may thus ask why there is a proliferation of interest in and invocation of hope from around the turn of the Millennium and ponder about its resonance in academic debates.

Considering this question, Jansen and I have suggested that this proliferation reflects a “widespread sense of crisis and a heightened sense of lack of political and ideological direction in this situation” (Kleist and Jansen 2016, p. 374) in which hope has resonance or is perceived as “a political and ethical virtue” (Anderson and Fenton 2008, p. 77). The shattered belief in a peaceful post-Cold War and, more generally, in modernist metanarratives of progress has distorted the social and political imaginaries that underpinned much of the twentieth-century political thought and development, we argued. Moreover, the militarized and securitized responses to these crises and their apparent lack of success and sustainability have added to a sense of lack of hope. One of the responses to this situation has been a surge of scholarship searching for and identifying hope in an extremely diverse range of topics and phenomena. Often the recognized or proclaimed hope is understood as inherently good and in accordance with the author’s own values and hopes (ibid.; Jansen 2021), being identified in (certain) resistance movements, activisms, and progressive or liberal politics (see, e.g., Solnit 2016).

Reflecting on the current moment 5 years after we wrote this analysis – after Brexit and the presidency of Donald Trump, and in light of the still ongoing Covid-19 Pandemic – it seems like a perhaps even more acute sense of crises and uncertainties prevails (cf. Scoones and Stirling 2020). Almost ironically, such a sense of intensified crisis may go hand in hand with a hardening of certainty, as reflected in the proliferation of fake news,

untruths, and growing polarizations (Back 2020; see also Solnit 2016). We may understand this as a situation of gloom or hopelessness. Yet, if we approach hope as a phenomenon that can be studied empirically, the ambiguities and even conflicts of specific hope(s) emerge. People hope for different lives and futures and these hopes may be contradicting each other or change over time. Both Barack Obama and Donald Trump rallied hope in their presidential election campaigns and policies, but these hopes revolved around very different visions of the hoped-for future and targeted different groups. Brexit offers hope to some and hopelessness to others. What is more, people may cling on to hopes whose realization appear impossible. Poignantly termed “cruel optimism” by Laurent Berlant, this refers to “a relation of attachment to compromised conditions of possibility” (Berlant 2011, p. 2). Just as instances of “the possible” are not valuable or desirable for all of us, neither are all instances and modes of hope.

Governing Hope and Hopelessness

An influential way of studying/approaching hope in the social sciences is in a political economy perspective, with attention to governance and the conditions of possibility underpinning hope. This prompts analysis of the production, distribution, and trajectories of (certain) hope(s) and modes of hopefulness or hoping; about whose hopes are supported or revived while others are deterred. Hope is “imbricated in different forms of power” (Anderson and Fenton 2008, p. 79) and it is distributed unequally to different groups, as anthropologist Ghassan Hage has argued (2003). Focusing on neoliberal Australia, he has suggested that states produce and distribute visions of the possible lives and futures for its population within society, generating differentiated societal hope, as he terms it, for different groups. Hope is governable and governed, in other words, and may thus have a distinct political dimension. The contentious topic of migration to Western countries constitutes a poignant example.

Since 2013, Australia has pursued an offshore processing policy where so-called spontaneous

asylum seekers will be transferred to offshore processing camps in Papua New Guinea and Nauru.¹ The camps have been widely criticized for human rights violations and cruelty (e.g., HRW 2021) and, for a while, an offshore processing policy was not considered politically possible (or dignified) to implement in European contexts. This has started to change, however. In 2020, the UK considered establishing an offshore processing camp at Ascension Island in the Atlantic Ocean but did not proceed (BBC 2021b). In 2021, Denmark passed legislation that allows offshoring asylum processing, followed by a memorandum of understanding with the government of Rwanda and an official government visit to the country to, it was speculated, discuss the possibilities of establishing an offshore processing camp there. A few months later, Denmark delivered 90 kilometers of concertina – a particular mutilating form of razor wire – to Lithuania to fortify 15 kilometers of its border and thereby hinder migrants and asylum seekers entering the EU from Belarus. The delivery was followed by a visit by the Danish Minister for Integration and Immigration to inspect the fence (Politiken 2021).

These developments show that the Australian, Danish, and indeed many other governments actively distribute hopelessness to migrants and asylum seekers considering or attempting to enter their borderlands or territories. Furthermore, they ensure that this message of hopelessness and its materialization through militarized surveillance, border fences that may literally carve up bodies, and policies or intentions of offshoring is widely medialized and communicated to potential asylum seekers as well as to citizens and voters. Such a policy spectacle (Kleist 2015) thus signals the political will to protect the nation's borders and promoting national interests for groups that perceive immigration as a threat. What is distributed hopelessness from one position may be perceived as an act of preserving hope from another

where tough-on-immigration policies generate societal hope.

My message here is not that an analysis of the governance of hope should be devoid of ethical and value-based considerations. We are always thinking, speaking, and writing from specific positions, and ethical and political standpoints and action may be called for (e.g., Solnit 2016; Back 2020; Nyabola 2021). In bell hook's words, "hopefulness empowers to continue our work for justice even as the forces of injustice may gain power for a time. To live by hope is to believe that it is worth taking the next step" (2003, pp. xiv–xv, cited in Back 2020, p. 5). Les Back (2020) and Solnit (2016) seek to inspire communality and agency through hopeful scholarship whose role is, in Back's formulation, "to portray and document and inventory of those moments of repair that suture damage, where hate gives way to love, convivial coexistence bridges divisions and inclusions" (2020, p. 18). Finally, Ghassan Hage calls for a politics of co-hoping and "modes of imagining one's own hope with the hope of others and not at their expense" (2016, p. 466). However, as he also notes, focusing solely on the distribution of hope "can blind us to the process of production" of inequality, including processes of extraction and exploitation (2016, p. 466).

Hope, then, may inspire and sustain engaged scholarship and practices that address inequalities and injustices. Indeed, I hope for that. My point here, however, is that we cannot assume that hope or hoping has an a priori liberating, emancipatory, or morally superior quality. In the introduction of a special section on the politics of hope, Marjo Lindroth and Heidi Sinevaara-Niskanen demonstrate this point forcefully when they argue that "hope and hopefulness are offered to those whom the world is unable or unwilling to offer anything else" (2019, p. 645). Such a position echoes Berlant's notion of cruel optimism, diagnosing hope in the service of exploitative political agendas, whether by design or through the inadvertent effects of political projects or programs. In line with Crapanzo's writing on the passive effects of hope (2003), Lindroth and Sinevaara-Niskanen suggest that the projected futures – the distributed hope – offered to groups of vulnerable people,

¹ The detention camp in Papua New Guinea will be closed from 2022 while the offshoring processing policy continues on Nauru (BBC 2021a).

such as victims of armed conflict or indigenous people reclaiming their land, maintains the status quo through placing the promise of change in the future, rather than today.

Social Hope in High-Risk Migration

Hope is thus a deeply ambivalent phenomenon, not least when invoked in and governed through politics. We should be careful not to conflate the distributed societal hope with the actual “uptake” of hope or modes of hoping. Political (and other) initiatives and projects do not necessarily pan out the way planned but often have inadvertent effects, whether in case of infrastructural projects (Appel et al. 2018), humanitarian reconstruction sites (Sliwinski 2016), or migration deterrence campaigns (Vammen *forthcoming*). The visions and intensities of inclusion, possibility, or entitlement – or the lack thereof – in the distributed societal hope may be embraced or seen as irrelevant. States are not the only distributors of hope in societies; there are a range of other institutions and actors that may constitute repositories and sources of hope (Cook and Cuervo 2019; Kleist 2017b; Turner 2015). It therefore makes sense to keep both societal and social hope in mind (Hage 2003) where the latter refers to “social imaginaries and collective visions of the good and meaningful life and future within particular societies and groups” (Kleist 2017b, p. 7). We may thus consider the societal hope distributed by the state as a subset of social hope, rather than necessarily the most important or dominant one. The importance of migration as an imagined pathway for a more dignified life and better future in West Africa is a case in point (Kleist and Thorsen 2017).

Studying migration implies attention to the spatial dimensions of hope beyond the nation-state (or beyond the current location of residence within the nation-state). Just as society is not necessarily delimited by the borders of the nation-state (Wimmer and Schiller 2002), neither is hope. Rather, social hope may be mapped onto specific locations or more blurry zones in different intensities and scales that reflect imaginaries of opportunities and principles of modes of

engagement – be it accumulation, pleasure, or security – that such places are perceived to offer (Mar 2005). As I have shown in the case of high-risk and precarious overland migration among, primarily, young men traveling overland from Ghana to Libya through the Sahara Desert (and sometimes onwards to Western countries across the Mediterranean Sea), there is a discrepancy between the visions of societal and collective social hopes that these groups receive and uphold (Kleist 2017c). Whereas societal hope revolves around notions of opportunities for upward social mobility in Ghana if you work hard and diligently, many young people find themselves in situations marked by unemployment and the lack of belief in a viable and dignified future in Ghana. Conversely migration constitutes a repository of social hope for would-be migrants, their families and communities. It should be emphasized, though, that migrants often articulate their hoped-for future as located in Ghana, rather than abroad, hoping for a transformation of their lives through migration. Furthermore, we should keep in mind that such social hope is not shared by everybody in Ghana (*ibid.*, Setrana 2021). It is not universal but comes in different variants and intensities; likewise, it may fade or grow stronger over time.

The ambivalence, uncertainty, and potential withering of hope is pertinent in another aspect of migration, that of deportation and other kinds of disrupted migration projects. The social hope invested in migration may turn to (temporary or long-term) despair and hopelessness for deportees and evacuees from civil war who return with no or insufficient resources (Kleist 2017a, c, 2020). Following social stigmatization, a similar or deteriorated economic situation as prior to migration, and inability to live up to ideals of respectable masculinity and adulthood, many deportees opt to re-migrate or are trapped in continued precariousness. Despite widespread knowledge of the hazards and risks of detainment and deportation in (what turns into) irregular migration, deportation tends to be individualized as an expression of personal “failure” or bad luck. The collective social hope invested in migration as a pathway to a better future is thereby maintained, through

downplaying the role of structural constraints, restrictive regimes of mobility and conflicts.

Conclusion

Considering hope in relation to the possible highlights issues of anticipation, potentiality, and uncertainty. As a central trope in European thought through centuries, even millennia, hope has been conceptualized and theorized in relation to different aspects of human existence, with a re-emergence of hope scholarship during the last two decades. While a plurality of themes, definitions, and accentuations can be identified, two overall modes of hoping stand out: that of hoping for something specific – *hope(s)* – versus the affect of being *hopeful* toward the future or as a way of coping with the presence. Understanding hope as a spatiotemporal phenomenon implies analysis of the wider political economies that ignite, sustain, or (seek to) extinguish particular hopes and hopefulness, whether in regard to the unfolding of specific hopes or their phenomenological or existential aspects (see, e.g., Lucht 2017). We may thus approach hope in many ways. Nevertheless, an understanding of hope as socially situated calls for analytical attention to the intensities, pluralities, scales, and trajectories of hope and hoping, and the conditions of possibility underpinning them.

Reflecting on the recent abundance of studies of hope, I suggest that this proliferation is embedded in a generalized sense of crisis and intensified uncertainties that prompt searches for hope (Kleist and Jansen 2016). We may further speculate that the so-called affective turn in the humanities and social sciences since the middle of the 1990s (Clough 2008) has stimulated more interest in hope and hopefulness as affective phenomena (cf. Anderson and Fenton 2008; Cook and Cuervo 2019). Indeed, one could argue that hope and uncertainty constitute critical affective dimensions in times of crises. Hope as affect does not preclude attention from the political economy of hope, however, and much current scholarship focuses on governing (through) hope, often inspired by Hage's work.

While hope has structural dimensions, it is not structurally determined, and hoping subjects may take up and embrace other visions of social hope – or their absence – than those inspired, produced, and distributed by the state. Migration toward Western countries illustrates this tension. On the one hand, states seek to send a message of hopelessness in migrating to their territories through restrictive migration regimes. On the other hand, migration continues to constitute a source of social hope in many societies, where hope for creating a more livable and dignified life and future is mapped onto locations or zones elsewhere. Whether such hope is realized is a completely different matter – in migration as in other aspects of life. Hope is fundamentally uncertain and ambivalent, it may inspire critical and engaged scholarship and political practices, just as it may postpone the redress of inequalities.

Cross-References

- Anticipation
- Mobility
- Uncertainty

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Human Rights and Peasant People

Zayda Sierra¹, Hader Calderón-Serna¹, Hernán Porras-Gallego² and Sonia Cárdenas-Solís³

¹Research Group Unipluriversidad, Universidad de Antioquia, Medellín, Colombia

²Corporación CEAM, Marinilla, Colombia

³Instituto de Sociología y Estudios Campesinos, Universidad de Córdoba, Córdoba, España

Abstract

The current dominant discourses on the benefits of a global market economy offer the illusion of a homogeneous world that is constantly moving towards progress. However, for thousands of rural communities, this process has meant a major impoverishment due to the expansion of agro-industry and extractive mine business, causing the destruction of

water sources and ecosystems, the forced displacement of peasants to urban centers, and the enormous loss to humanity of diverse cultures and knowledges.

The current Covid 19 pandemic evidences the enormous social and environmental debt with peasants, indigenous and Afrodescendant people, and other rural population who feed the world but are in a very vulnerable social, political, and economic situation, and therefore the importance of protecting and implementing their human rights.

All societies – globally, nationally, and locally – need to keep transforming unjust and exploitive relationships among people and with nature. Here we briefly present some discussions related with the need of special rights for peasant people from equality and equity perspectives, acknowledging the complexity and challenges that rural men, women, and children handle in their territories, inviting researchers from different disciplines, social leaders, and other practitioners, to join the implementation of their rights and keep dreaming, with the peasant movement around the world, the possible.

Keywords

Equality · Equity · United Nations · Human rights · Peasants · Rural population · Neocolonization · Sustainability

The Complex Interweaving of Equality and Equity Rights

Human rights theory and practice can be summarized as a commitment to respect, cherish, and treat all life with the utmost care, without any distinction. However, the complex interrelationship between universality versus diversity, equality versus equity rights is continuously on debate. The concept of equality involves the recognition that any person, regardless of race, sex, creed, or social status, should have the same rights, possibilities, and opportunities. “Equality” means that everyone should receive the

same or similar treatment. However, as the Ontario Human Rights Commission (2013) has indicated, the problem is that “formal equality” ignores historical and ongoing barriers, does not allow for special needs, and can even continue inequality for certain groups. Therefore, the need for the development and use of special programs as effective ways to achieve “substantive equality” by helping reduce discrimination, or addressing historical prejudice.

Facio and Morgan (2009) have called the attention to the restrictive formal way the concept of equality has been interpreted and applied in the history of women’s rights. For them, the concept of equality is androcentric, which is to say that men are the frame of reference and their experience is the norm, while the concept of equity allowed feminists to bring to the table the enormous differences not only between men and women but also the intersectionality of gender with ethnicity, economic class, geographic location, immigration status, sexual identity and orientation, age, abilities, and other such factors. Nevertheless, both authors argue, the term “equity” is a subjective term that can mean different things to different people. Human rights for women based only on equity would not have any practical worth because there will be thousands of justifications for limiting them for reasons of sex, ethnicity, age, ability, sexuality, etc. Instead, the term equality, as “substantive equality,” is measurable in that it can only be reached when there no longer exist any of the various forms of discrimination against women: “neither our differences nor our similarities should be reason for exploiting, discriminating against, oppressing, or in any other form dehumanizing us” (Facio and Morgan 2009: 23).

In the same order of ideas, Karima Bennouna, the United Nations special rapporteur in the field of cultural rights, examined the cultural rights approach to the universality of human rights, and the close interrelationship between universality and cultural diversity:

Universality is about human dignity, not about homogeneity. But we must also recognize the diversity of diversities, not only between, but within all human groups, and the fact that, among others, women, minorities, freethinkers and persons targeted because

of their sexual orientation or gender identity have also been wrongfully subject to hegemony and abuse within groups. (Bennouna 2018: 5)

Thus the complex interrelationship between universality and cultural diversity, equality, and equity has been under constant debate and scrutiny. It explains why different social movements around the planet have demanded to the United Nations to expand the human rights law from a dominant male, individualist, and liberal meaning to encompass specific standards for vulnerable groups such as women in 1979, children in 1989, persons with disabilities in 2006, indigenous people in 2007, and, more recently, peasants in 2018. However, a more equitable access does not necessarily mean more equal access. As Vivallo Urra (2013) have shown, the notion of equity, through compensatory operations, can perfectly coexist with the social, political, and economic processes responsible for the unequal access to resources that it tries to mitigate. Equity tries, therefore, to compensate, but does not guarantee human rights.

A Paradigm Shift: Human Rights from a Decolonial Perspective

A decolonial perspective contributes today on interpreting better the must-needed changes towards recognizing human rights across different cultures and groups of people (equality) without ignoring diversity (equity), not merely compensating but challenging the historical causes of social injustice and discrimination. As reviewed elsewhere (Sierra and Glăveanu 2019), the most recent United Nations Declarations of the Rights of Indigenous Peoples in 2007 and of Peasants and Other People Working in Rural Areas in 2018 draw on the resistance of racialized and oppressed groups against the dehumanization, exploitation, and genocide that have occurred during several centuries of colonization and that, in other guises, continues today. Both declarations challenge predatory and unsustainable economic models and are a call for a decolonial and eco-feminist agenda that allows the recreation of life under new terms, in balance with nature, based on social justice and

equity (Escobar 1998; Harding 2000; Mignolo and Walsh 2018).

The structure of the society and its worldview are still strongly influenced by the modern colonial project: a global hegemonic structure of power that has been in place since the European conquest, articulating race and labor, land and people, on the basis of material gains (Mignolo and Walsh 2018). As Escobar (1998) explains, over the last 50 years, concepts like “poverty,” “Third World,” or “underdevelopment” were coined to promote the First World’s capitalist model of development globally and extend costly credits to former colonized countries (neo-colonization). Indigenous people, rural Afrodescendants, and mestizo peasant populations in Latin America, for example, are those who have suffered predominantly the negative effects of such an oppressive system. This is evidenced by their persistent marginalization, the loss and neglect of their own languages, knowledge, and culture, their difficult access to good lands and water resources, and the frequent violation of their basic rights – to health, to education, to welfare, and protection.

The process of capitalist development, characterized by an economy of unlimited consumption, despite its multiple crises, reinvents ways to continue growing and demanding territories. This modernizing process has been extremely violent in territories where new areas of crops are grabbed by international markets, where minerals and fuel sources continue being extracted, and where new dams, roads, and ports are built to circulate goods. This is why the territories of indigenous and peasants’ communities continue to be the target of “development” projects and resource extraction, which ends up depleting them and displacing the women, men, and children who inhabit these territories, who have been preserving and cocreating them (Escobar 2014; Cárdenas 2015).

According to Harding (2000: 245–246), from an ecofeminist and decolonial critique, the conception of development as economic growth has generated several problems, among them, (1) the conceptualization of development and human progress only in terms of economic production, which made women and household work more susceptible to be exploited; as a result, rural women’s living conditions have worsened and

their workload has increased; (2) nature itself presents limits to economic growth, as the world does not have sufficient resources to sustain global consumerist growth, and (3) conceptualizing development in terms of increased economic productivity and consumption ignores and devalues other “goods” that women and other cultures prioritize such as ethical, political, aesthetic, and spiritual values.

Different peasant organizations and different experts have been insisting on the need for a paradigm shift against extractivism and extended monocultivation to, instead, strengthening family agriculture, local economies, community ties, and the reconstitution of the peasantry (Ploeg 2010; Hilmi 2013; Sourisseau 2014). “Peasants and rural workers and their families still account for nearly half the world’s population, yet nobody – or almost nobody – used to give a thought to their needs” (Hubert 2019: 92). Concepts and principles of alternative paradigms to development are needed: Ikerd, Gamble, and Cox (2014) suggest an economy of deep sustainability, when questioning the growing threats to ecological and social sustainability rooted in a neoclassical paradigm of economic development dominant today, which is inherently extractive and exploitative, that is, unsustainable.

Food Sovereignty, Agroecology, and Rural Women’s Rights

In the declaration of Nyéleni (2007), 500 representatives from more than 80 countries, of organizations of peasants/family farmers, artisanal fisherfolk, indigenous peoples, landless peoples, rural workers, migrants, pastoralists, forest communities, women, youth, consumers, and environmental and urban movements outlined food sovereignty as the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. “It puts the aspirations and needs of those who produce, distribute, and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It ensures that the rights to use and manage lands,

territories, waters, seeds, livestock, and biodiversity are in the hands of those of us who produce food” (1).

Food sovereignty relates in a very pertinent way to agroecology, understood as the ecological management of natural common goods (air, water, land, and biodiversity), based on the application of local peasant and indigenous knowledge, to generate markets organized horizontally by the actors involved (Cuéllar Padilla and Sevilla Guzmán 2018). Unlike conventional and industrial agriculture, agroecology encourages greater knowledge about local ecosystems and sustainable agricultural techniques, which strengthens negotiation capacities and facilitates self-determination. According to Altieri and Toledo (2011), “after centuries of cultural and biological evolution, traditional farmers have developed and inherited complex agricultural systems, adapted to local conditions. These have helped to sustainably manage harsh environments and satisfy their subsistence needs, without depending on mechanization, chemical fertilizers, pesticides or other technologies of modern agricultural science” (cited by Delgado et al. 2013: 183). Agroecology as a science is a transformation alternative with great political potential, rooted in the power that people take when they recognize their own knowledge and historical contribution to the coevolution of agroecosystems and, at the same time, they give themselves the possibility of transforming their lives.

Timmermann and Felix (2015) highlight the role of agroecology for *contributive justice*, that is, the equitable distribution between meaningful work and tedious tasks. Conceiving the garden, the farm and the territory as an ecosystem requires paying close attention to the entire agricultural production process, which brings cognitive advantages, not only for food production. Agroecology makes the field work more interesting and encourages problem-solving, since farmers must develop skills and acquire valuable experiential knowledge on local ecosystems and agricultural techniques. This facilitates self-determination and makes farm work more attractive to a younger generation, an essential factor for safeguarding the continuity of family farms. By reconceptualizing and giving a

new value to work in the field, the principles of agroecology also contribute to the movement for food sovereignty and a greater well-being of rural families, particularly women.

Peasant women produce a large part of the world’s food and have been the guardians of traditional productive systems in which they have conserved germplasm and knowledge about them. However, these fundamental roles have not been recognized and promoted, and the overload of women is increasingly noticeable as they have to assume greater responsibilities in the productive dynamics, in addition to taking care of reproductive tasks, family health, the production of food for consumption, and to be the emotional support of their family nucleus. Likewise, they have been used in industrial agricultural systems as cheap wage labor. On the other hand, men are the ones who generally make decisions about the productive processes, even though the land belongs to women and they participate in the cultivation. To break initiatives to promote the strengthening of women as subjects of law are required that allow them to put themselves in a position of equality to work for a common future, in which their dreams, their potentialities, knowledge, and resources are also taken into account (Cárdenas 2015).

From eco-feminist educational experiences, Cárdenas and Zuluaga (2016) have shown how women, when they get to know their rights and knowledges, change their vision of themselves as mere agricultural helpers or laborers, engaged in insignificant jobs. Women learn to revalue the agricultural and food culture of their own territory, recognizing their contributions as producers of material goods (food, medicinal plants, and income) and symbolic goods (knowledge, innovation, and ability to create). They gain autonomy to define what interests them and defend their own options for associativity, the same ones that has led to these gains. By acquiring respect for their knowledge and work, women achieve important transformations in their families and communities. Agroecology is considered, then, of enormous impact for rural women due to its role in the reconstruction of the social fabric, environmental care, and food security of the family and local markets.

Peasants' Rights: An Historical Claim for Equally Substantial New Rights

Peasantry has a fundamental role in the right to food, in the conservation of biodiversity and in the mitigation of climate change through sustainable agriculture. However, because of their particular conditions, peasants suffer enormous vulnerabilities in a globalized world, which threatens peasant livelihoods, for example, through land grabbing resulting from the combined effect of the expansion of agribusiness, mining and real estate speculation. Based on this observation, the Declaration concludes that peasants require special recognition and protection by the States. (Uprimny 2018: 1)

In December 2018, the United Nations General Assembly adopted the Declaration on the Rights of Peasants and Other Rural Workers (UNDROP), at the initiative of La Via Campesina (LVC) movement, supported by the Centre Europe – Tiers Monde (CETIM), among other international organizations. The LVC union arose in 1993 out of earlier meetings that had pinpointed the similarities in peasants' conditions and difficulties in countries that seemed to have nothing in common but a related enemy: the World Trade Organization (WTO). Sharing analyses of their common experiences, the LVC peasants had developed a critical view of globalization and were aware of the dangers inherent in the worldwide liberalization of agriculture (Hubert 2019). After 25 years of discussion, this declaration was finally approved recognizing that the peasantry has particular living conditions because of its special link with the land and food production, and because of the development of particular forms of family and associative work.

As related by Hubert (2019), the declaration opens with a preamble presenting the concerns at the origin of the project, on how around the world, people living in rural areas are those most affected by hunger and poverty, along with those living in slums:

Today, rural workers do not earn enough and are under pressure from the cost of the inputs necessitated by the model of agriculture imposed on them. . . . Most peasant protests about their situation are met with repression and violence. To understand this scenario is to understand the urgent need to better protect the rights of peasants and

other persons working in rural areas. (The UNDROP, introduction. In Hubert 2019: 65–66)

The declaration has among its objectives: to protect the rights of peasants and improve the living conditions in rural areas, particularly of rural women; to strengthen food sovereignty, the fight against climate change, and the conservation of biodiversity; to encourage genuine agrarian reform and a better protection against land grabbing; for the right of peasants to save, use, exchange, and sell their seeds; and for remunerative prices for peasant production and the rights of agricultural workers, among others. Of the 28 articles covering the declaration rights, the leading organizations as La Via Campesina and CETIM highlight 7 because of their novelty and transformational potential: the right to land and other natural resources; the right to seeds; the right to a decent income and livelihood and to the means of production; the right to adequate food and to food sovereignty; the right to social security; the right to participate in decision-making; and, following from these rights, the general obligations on states (see Hubert 2019: 66–77).

A separate article of the declaration was devoted to the rights of peasant women and other rural women workers. As seen above, although women from rural contexts play a significant role in the economic survival of their families and in contributing to the rural and national economy, they are often denied tenure and ownership of land, equal access to land, productive resources, financial services, information, employment or social protection, and are often victims of violence and discrimination in a variety of forms and manifestations. The declaration stipulates, therefore, the need to change legislation that perpetuates discrimination against rural women. Their rights are one of the central pillars of the declaration (see Article 4 in Hubert 2019: 108–109).

The Multidimensional Nature of Rurality

In many different countries around the so-called Third World, the national educational systems are an imposed legacy of colonialist domination.

These educational systems, from preschool to university, are centralized, monocultural, and hierarchical, ignoring the learnings and contributions of indigenous, Afro-descendent, and mestizo peasant knowledge about the social and environmental complexity of their territories. Thus, the national educational systems contribute to the exclusion, marginalization, and invisibility of rural population. Lander (2000: 69), on his reflections on the geopolitics of hegemonic knowledge, sustains how the disciplinary structures of Latin American universities, “with their parceling of knowledge,” have become an obstacle to critically address questions about what and for whom of the knowledge that is taught and the research that is carried out. Current problems such as unlimited growth, wild capitalism, inequalities, human rights, militarism, and the risk to life on the planet are addressed in a fragmented way by different academic programs.

Haverkort and other authors (2013: 22), based on experiences with rural communities in Latin America, Asia and Africa, have expressed their concern about the injustice done to the diversity of cultures and local knowledge systems in the world if scientists, educators, and development practitioners limit their attention to imported knowledge and technologies of Eurocentric origin, which do not recognize the problems, challenges, and stakes of solidarity and self-consumption economies, which usually are described as premodern, retrograde, or primitive. Rural policies and education have been designed mainly from an economic and productive perspective, which peasants see merely as work force.

For Wallerstein (2001), the knowledge that is taught in universities ceases to be objective precisely because of the ignorance and denial of other knowledges. We cannot continue ignoring the political, economic, and power interests that have defined the evolution of modern sciences today, with adverse implications for the life of people and the planet (see also Fals Borda and Mora-Osejo 2004; Harding 1996; Haverkort et al. 2013; Nieto 2009).

If we consider rurality from a multi-dimensional view, we need to see the interrelating components of a territorial system. That is, taking

into account not only the economic and productive dimensions, but also the political, social, environmental, and cultural ones. The interaction of these dimension can, at a given time and circumstance, be as important as the main components. Based on Sepúlveda (2008), the *social and cultural dimension* refers to the spatial, gender, and population distribution in a territory and their relationships, which include aspects such as the satisfaction of basic needs, preservation of cultural heritage, and proper ecological practices. The *economic dimension* involves the interfaces of primary activities with those of processing and trade. It includes poverty eradication; access to goods and services; the creation of markets for sustainable activities; and the establishment and promotion of even markets. The *environmental dimension* relates to a balanced management of the ecosystems and natural resources. The *political dimension* has the democratic governance as a priority, looking at the interaction between hegemonic groups and other actors, as well as various types of political balances and negotiation processes.

The UNDROP contributes to a better understanding of the complexity and multiple dimensions of rural life. Different educational initiatives need to be created to ensure the knowledge of their rights by rural men, women, and children, and that they can strengthen their political participation and decision-making in all dimensions:

States shall formulate, in partnership with peasants and other people working in rural areas, public policies at the local, national, regional and international levels to advance and protect the right to adequate food, food security and food sovereignty and sustainable and equitable food systems. States shall establish mechanisms to ensure the coherence of their agricultural, economic, social, cultural and development policies with the realization of the rights contained in the present Declaration. (UNDROP, Article 15, 5).

Some Conclusions

With the adoption of the Declaration on the Rights of Peasants (UNDROP), the nations of the world face the challenge of seeking equity and equality, nondiscrimination and the right to development

for peasants and all rural workers and populations, to guarantee their right to participate in the management of natural resources and to enjoy in a fair and equitable manner the benefits of their development and conservation in their community, to provide land to work, as well as the right to access seeds to sow and distribute the products of their crops, and the right to income and decent livelihoods. This is a greater challenge for the educational systems (Hubert 2019).

Strengthening family and subsistence agriculture has been proposed as a key element in responding to global challenges such as climate change, food security, scarcity of fossil resources and employment, and emerging diseases. Self-consumption agriculture has persisted despite the invisibility with which it has been treated by development in the modernization process and by policies that have become a constraint and risk of its disappearance (Cárdenas 2015: 2).

Family and small-scale agriculture are inextricably linked to global food security. Family farming rescues traditional foods, contributing to a balanced diet, the protection of the world's agricultural biodiversity, and the sustainable use of natural resources. Family farming represents an opportunity to boost local economies, especially when combined with specific policies aimed at social protection and community well-being (Grisa and Sabourin 2019).

In agreement with Machado (2011), recognizing rural populations' rights imply reviewing not only the negative impacts of the so-called "green revolution" (abuse of agrochemicals, monocultures, and deforestation), but also understanding that rurality goes beyond the economic, productive, and competitive dimension of extractive economies. It is clear that the maintenance of present and future generations depends on the possibility that rural people can remain in their territory, strengthening their human and social capabilities, that they are not forced to emigrate due to poverty and violence, that there are environmental safe conditions, and an adequate standard of living for themselves and their families.

From an eco-centric paradigm, it is necessary to recognize the interconnection of reality and the fundamental unity of the universe and other more

responsible forms of social organization (Shea 1998). The recognition of the rights of peasants and other rural populations is part of another conception of life. Their implementation means transforming androcentric and anthropocentric oppressive paths of development and creating other possible ways of existing (re-existing, see Walsh 2015). It is our duty, as citizens of the world, to learn about indigenous people and peasants' rights to work towards their implementation in each sphere of human action.

Annex: The Colombian Case

Defeating the Vulnerability of Peasants' Rights: A Challenge for Universities

For us, territories are for life, that is, territories must be for people. For the neoliberal model, the territories are not for the people, that is, the territories are worth as soon as there is an economic interest there. . . . The territory for us is also spirituality, that is, the construction of that form of feelings, thoughts and relationships beyond the physical part. (Robert Daza, agrarian leader, in Quintana 2015: 1)

The territory is and forms part of our social and cultural experience and can never be considered as a commercial exchange property. For us, the owners and ancestral inhabitants, it is a space that welcomes the life of the communities in an integral manner, with its own peoples, cultures and social organizations, and that provides us with the natural resources for the reproduction of life and culture. (Ascoba-Asociación de Consejos Comunitarios y Organizaciones del Bajo. Atrato. Cited in Coronado 2009: 11–12)

Despite its relatively small size, Colombia is considered one of the world's ten "megadiverse" countries because of its varied ecosystems and cultural and linguistic diversity (Maffi 1998, 2005). About 33% of the Colombian population still lives in predominantly rural areas inhabited by indigenous people, rural Afrodescendants and peasant communities (small mestizo families dedicated to agriculture) (Machado 2011). The most recent agricultural census (DANE 2014) corroborated that Colombia is still a country with a high concentration of rural property. Land ownership in Colombia is far from being democratic: 69.9% have less than 5 hectares and occupy only 5% of

the census area, while lands of more than 500 hectares are in the hands of 0.4 of the owners and represent 41.1% of the 113 million hectares surveyed.

This concentration of land has been an endless source of conflict. The expansion of the agrarian frontier has generated deforestation, alarming poverty, and inequality (Mejía and Mojica 2015; OXFAM 2013; Misión Rural 2013). Peasants and other rural inhabitants continue having the least opportunities in society: 5% are in a condition of multidimensional poverty, 89% have no access to loans; illiteracy in rural areas of the country reaches 11.5% in those over 15 years of age (while the national percentage is 6.6%), 20% of children between 5 and 16 years of age have not attended any institution, and 73% of children under 5 years of age do not go to kindergarten (DANE 2014). As Cárdenas (2015) ascertained: in five decades of social and armed conflict, peasants, indigenous peoples, and rural Afrodescendants have lived through the pain of scattered horrors. The reality is overwhelming and shows Colombia as a characteristic example of capital accumulation through dispossession in the five last decades: 5.2 million peasants violently displaced from their regions and deprived of 8 million hectares, many of which were integrated into mining development as well as palm, sugarcane, and other monoculture projects.

This represents a social catastrophe as power continues to be in the hands of a few agents with broad territorial dominance: traditional landowners or hacienda owners, agricultural or mining entrepreneurs, drug traffickers in their search for social and political legitimacy, and the guerrillas as a state power. The peasant culture faces high risks of survival and environmental damage (Rojas Guerra 2012; Londoño 2015: 1–2); rural women were particularly affected (Cárdenas and Zuluaga 2016). Although there are historical achievements in the recognition of political, territorial, and cultural rights in favor of indigenous, Afrodescendants and peasant populations, achieved in the Political Constitution of 1991, the Law 70 of Black Communities of 1993, and

Law 160 of Rural Peasant Development of 1994, these rights continue on paper and rural populations continue to face the violation of their human rights, the destruction and loss of their territories by extensive cattle ranching, agriculture and mining, and the assassination of their leaders.

Unfortunately, to date the peasant person has not been recognized as a social subject by those who construct public policies in the country, generating a crisis for this social group, exacerbated by phenomena such as forced displacement, change in land use and concentration of ownership, inadequate use of productive resources and in general the conditions of poverty in the rural sector. (Misión Rural 2013: 3)

The economic role of the peasantry in food production, contribution to exports and foreign exchange generation has not been properly recognized, despite peasants' capacity to transfer surpluses to other sectors of the economy. The Misión Rural (2013) shows how small producers and family farmers are those who contribute to the country's food security and demonstrate not only economic efficiency when they have access to relatively acceptable production conditions but also the capacity to generate economic development and effective solutions to rural poverty.

Although Colombia was among the 54 abstentions for the Declaration of Peasants' Rights, the final vote by 193 member states in December 2018 lead to a new promising chapter in the struggle for the rights of peasants and other rural communities, guaranteeing their access to and control over land, peasant's seeds, water, and other natural resources.

Education in Rural Contexts Should Be Based on Socially Relevant Problems

According to our experience and discussions with rural participants from different Colombian contexts and projects (Calderón Serna 2015; Cárdenas 2015; Porras 2019; Sierra et al. 2010, 2016), education in rural contexts, from an equality and equity perspective, should serve to identify and address the different factors that render so vulnerable their rights. Vulnerability

aggravated by the absence of higher education programs relevant to the diverse social, cultural, and environmental rural contexts, which has led the new generations of rural youth to migrate to the cities in search of postsecondary studies and sources of employment to finally not return to their territories. Hence, for Jiménez (2017), addressing adequately the challenges of higher education in the rural setting should not become a priority but a national emergency, promoting the sense of belonging within rural society through a new rural educational policy, making the demands and rights of diverse rural population visible (Santos 2012), incorporating their life experiences, worldviews, and cultures; constructing with them other forms of learning, doing, and teaching (Arias 2017), and critically building knowledge dialogue with other views and perspectives.

To respond to this historical debt of advancing culturally pertinent higher education for diverse rural populations at Universidad de Antioquia, we developed a research project during 2012–2019 to design in collaboration an undergraduate program in *Pedagogy in Rurality and Peace*, to get the approval of the Ministry of Education and be formally offered in 2021. This implied the creation of alliances with peasants community organizations and NGOs that work with/from/and for rural communities and the Faculties of Education, Public Health, Agrarian Sciences, Social and Human Sciences, among others.

Different encounters, some formally organized through outreaches courses or diplomas, allowed us to explore better how the university should get closer to the rural communities and establish dialogue with diverse participants. With social leaders, men and women, young and elders, issues relevant to their contexts were identified, as well as objectives, themes, and guiding questions, reflecting on personal, family, community, and territorial life. A main issue is how participants' different personal interest and common topics should contribute to build or enhance the community life plans (CNA 2015), promoting participant's capacity for

action on different political spaces, not as passive subjects or mere recipients but as creators of their own reality.

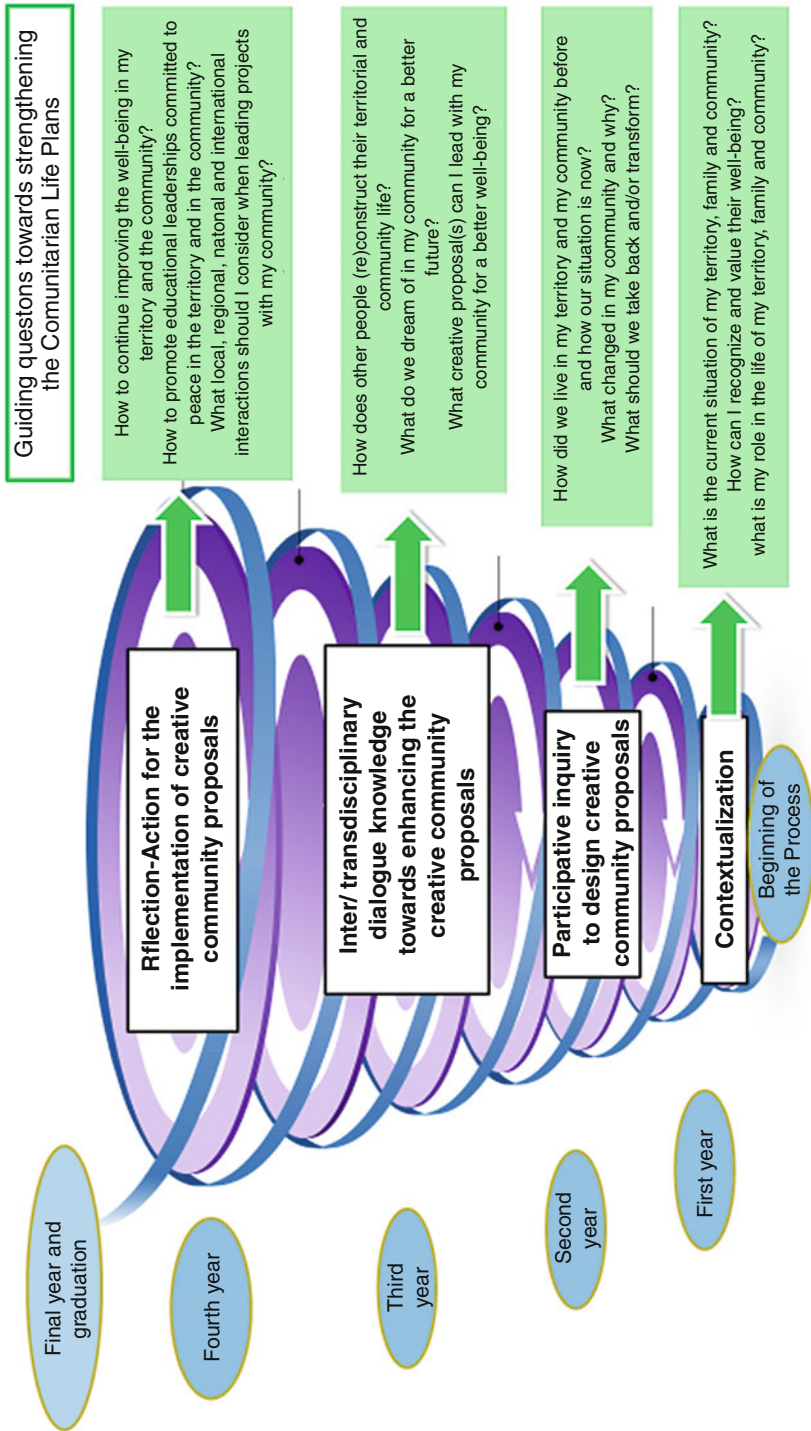
All encounters with the diverse rural participants served as the basis for the collaborative curricula construction of the *Pedagogy in Rurality and Peace* program, which can be better described in the following Graphic 1.

The guiding questions help participating community leaders, women and men, to identify problems or situations to improve in their community, towards designing creative community proposals, which will configure the investigative work that each participant will develop. The creative community proposals configure the space of connection and tessitura of the discussions of the different training spaces, and at the same time the translation of them to their territory, from a collaborative and projection perspective.

The sustainability of rural communities and their ecosystems requires the strengthening of leadership capacities and creativity in their population, especially young people, in what we have seen as four content axes: territorial management, human rights, well-being of the communities, and pedagogies towards the construction of peace. These content axes are intertwined considering the challenge posed by an ecosystem perspective, that is, that the whole is meticulously articulated in all its levels and manifestations, and that each one of the parts can only be understood and explained in terms of the whole (Aristizábal 2001).

For a better understanding of the interrelation of the different content axes in the Pedagogy in Rurality and Peace Program, we use the metaphor of a tree, seen as a complex ecosystem itself (see Graphic 2 Tree of Knowledge).

Through the *Pedagogy in Rurality and Peace Program* by the University of Antioquia, we hope to contribute with discussions and reflections on the social construction of life and rights of peasant communities and other rural populations in Colombia, from decolonial paradigms and sociocultural perspectives of sustainability.



Human Rights and Peasant People, Graphic 1 Pedagogy in rurality and peace. Main guiding questions and spiral educational process towards strengthening the community life plans



"THE FRUITS":		
Degree projects: community creative proposals by each student in permanent dialogue with community organizations or other rural participants		
"BRANCHES OF KNOWLEDGE":		
Deepening our understanding		
Pedagogy of Territory and Territorial Governance	Pedagogy of Good Living and Community Health	Pedagogy in Rural Education, Human Rights and Peace
"THE TRUNK":		
Pedagogical research and participative interaction		
Pedagogies of Rurality	Pedagogical and Investigative Practices from Rural Diversity	Popular Communication and Sociocultural Animation
"THE ROOTS"		
Inter / transdisciplinary dialogue towards a rurality with equity and equality		
Nature and Territory	Governance, Autonomy and Leadership	Good Living and Community Health

Human Rights and Peasant People, Graphic 2 Pedagogy of rurality and peace. Tree of Knowledge

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Technology, Organizations, and People (TOP) Model that supports integration of Technology, Organizations, and People during the whole life cycle of a system. HSI is inherently multi-agent, takes the system approach, and looks for the elicitation of emergent systemic properties through human-in-the-loop simulations (Virtual HCD). Human and machine are represented as systems defined by their structures and functions, which are characterized using the “context-resource orthogonality” framework. This encyclopedia entry provides HSI psychological and sociotechnical foundations, based on a nonlinear and self-organizing system perspective that departs from the traditional linear reductionist approach in psychology and engineering. This HSI epistemological endeavor addresses concepts such as separability, familiarity, emergence, tangibility, agonist-antagonist processes, symbiotic cognitive, and physical structures and functions.

Keywords

Human-systems integration · Tangibility · Human-centered design · System science · Systems engineering · Systems of systems · Complexity · Open-nonlinear self-organizing systems · Emergent properties · Human-in-the-loop simulation · Multi-agent modeling · TOP model

Human-Systems Integration

Guy André Boy
CentraleSupélec, Paris Saclay University,
Gif-sur-Yvette, France
ESTIA Institute of Technology, Bidart, France

Abstract

Human-systems integration (HSI) denotes a possible evolution of two disciplines, that are Human Factors and Ergonomics (HFE) and Human-Computer Interaction (HCI), that led to Human-Centered Design (HCD), more specifically within the field of Systems Engineering (SE). HSI pragmatically considers the

Introduction

The main objectives of this encyclopedia entry are (1) to improve our understanding of why psychologists and social scientists together with systems engineers and other stakeholders involved in the design of complex systems should be working in a participatory manner, (2) to provide salient elements of the emergent Human Systems Integration (HSI) field, and (3) to consider how new complex systems impact our working and everyday lives. But first, let us provide why HSI has become so important today, and opens the possibility of a new transdisciplinary endeavor in both science and engineering.

It is common to observe that technological systems are often integrated too late, leading to

both wrong or unexpected usages, and lack of resilience facing unexpected events. Resilience engineering has been studied (Hollnagel et al. 2006), but without providing solid fundamental engineering design solutions. A large amount of money is still spent to improve usages by developing appropriate user interfaces and operations procedures. This is the logical result of technology-centered Systems Engineering (SE) of the twentieth century. What did happen? Engineers had to design and develop machines mostly using mechanical engineering, making tangible things from tangible things (i.e., from pieces of metal that were assembled, screwed, and so on). During the last three decades of the twentieth century, electronics and software were massively incorporated into mechanical machines to improve their functionalities and usability. Automation (automatic control) and Human-Computer Interaction (HCI) were the main disciplines that were used to this end. This move could be summarized as the **hardware-to-software shift**.

Let's take an example. During the 1970s, car engines could be mechanically maintained more or less easily by car owners. Today, once a failure occurs, car owners let car maintenance professionals provide a diagnostic using a software-based system that provides meaningful information, such as the price it will cost to fully repair failure's cause. This shift increases system's availability by minimizing time it will take to repair the car. System's components have become standardized, easily changeable, and disposable.

Since the beginning of the twenty-first century, almost all technological systems are designed on computers. First concepts are presented on PowerPoint slides. Then, more sophisticated models are produced using appropriate Computer-Aided Design (CAD) tools. These models are subsequently used into simulations, which are with human(s) in the loop. More specifically, Human-In-The-Loop Simulation (HITLS) provides means for discovering potential emerging behaviors and properties that cannot be anticipated without observing activity of the various human and machine agents. By enabling incremental discovery of emergent behaviors and properties (Boy 2013), HITLS is a key resource for

Human-Centered Design (HCD), which cannot be done without an agile development approach (Schwaber 1997, 2004; Sutherland 2014). In fact, HITLS makes HSI possible and effective. This is great news! However, since such virtual HCD relies on the use of virtual prototypes, now often called digital twins, tangibility is at stake and needs to be considered seriously. Indeed, a virtual prototype of an aircraft is not a real aircraft! The virtual prototype has to be transformed into a physical prototype. This move could be summarized as the **software-to-hardware shift**.

Let's take an example. Aircraft wings are digitally designed using CAD and fluid dynamics software, providing requirements for the development of wings, which can be 3D printed to produce physical wings. Most importantly today, tangibility of emerging Artificial Intelligence (AI) algorithms (also called data science) used in design and operations of complex systems must be studied in depth. The concept of digital twin is crucial in HITLS. Many instances of digital twins are currently available, more specifically in the form of aircraft simulator (Fig. 1).

Let's emphasize the need for HSI, where a system can be both a human and/or a machine. It provides epistemological foundations for the psychology of HSI, articulated around concepts such as separability, familiarity, emergence, tangibility, agonist-antagonist processes, symbiotic cognitive and physical structures and functions, and most importantly a nonlinear and self-organizing system perspective that departs from the traditional linear reductionist approach in both psychology and engineering. Tangibility assessment still requires combining creativity and experience, as well as complexity, flexibility, stability, maturity, and sustainability metrics.

Human System Integration: A Historical Approach

It would be difficult to make sense of HSI without defining the distinction between **task** and **activity**. A task is what is prescribed to be done. An activity is what is effectively done once the task is executed. Task analysis has been extensively used to



Human-Systems Integration, Fig. 1 Example of a tangible combat aircraft simulator

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support the design of user interfaces (Kirwan and Ainsworth 1992; Mori et al. 2002; Diaper and Stanton 2004). However, usability studies have shown that activity observation and subsequent analysis are crucial to improve interaction design (Kaptelinin and Nardi 2006) and ergonomics (Leplat 2008). For a long time, the main problem was that activity was only observable on existing systems whether currently used systems prior to novel design or once a new system was fully developed. On the one hand, activity analysis on existing systems prior to starting engineering design usually forces conservatism and continuity; disruptive innovation can be considered as dangerous. On the other hand, activity analysis once a new system is fully developed is likely to show design flaws that will or will not be possible to fix in depth from a systemic point of view; only cosmetic patches can be brought at the user interface level. This has been done for a long time.

Historically speaking (Fig. 2), the field of Human Factors and Ergonomics (HFE) was born after World War II. Ergonomists are mainly psychologists and physiologists. During the early 1980s when micro-computers started to be adopted by a large public and more specifically text processing was starting to become current practice, ergonomists got interested in the way people interacted with computers. Human-Computer Interaction (HCI) was born, introducing new kinds of investigations where computer scientists

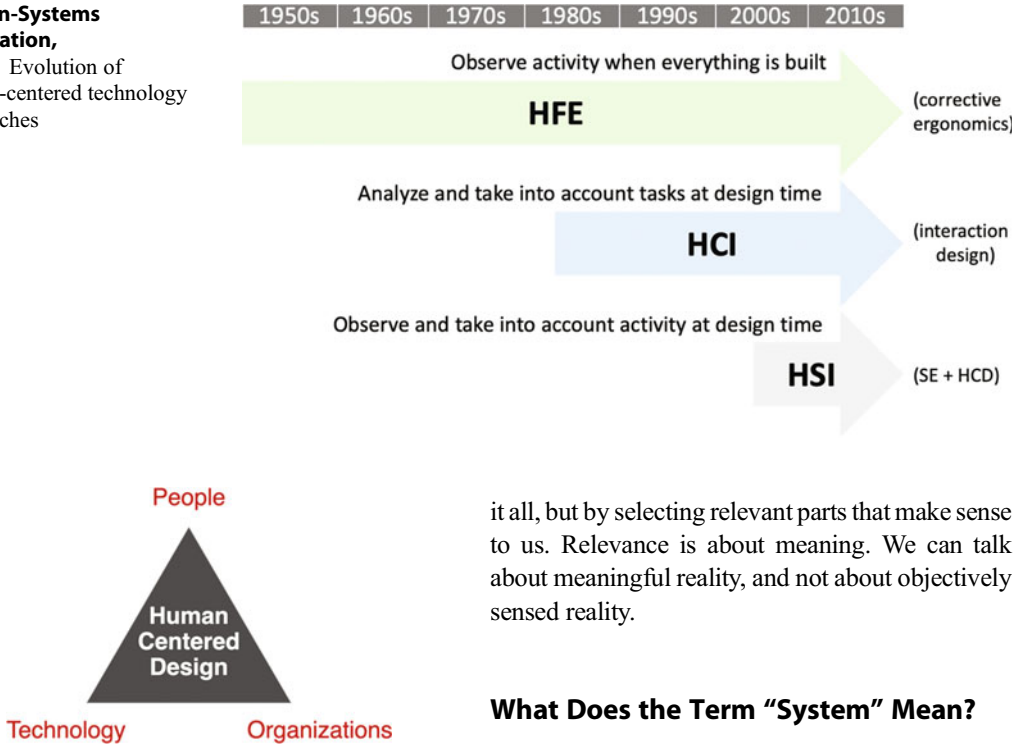
had to deal with human factors in computing systems (Card et al. 1983). HCI specialists took the lead on the design of Graphical User Interfaces (GUIs). HCI contributed to the development of a large set of task analysis methods, limited however to computing systems and not necessarily to multi-physical complex systems, such as aircrafts, air traffic control systems, and nuclear power plants, where observed activity is generally different from related prescribed tasks, typically provided in the form of operations procedures. Related user interfaces, whether they are called cockpits or control rooms, involve deeper considerations than what generic desktop GUIs usually bring. Unfortunately, many user interfaces tend to hide engineering design flaws, and unfortunately adapt people to developed systems, creating situation awareness problems in critical situations.

Since the beginning of the twenty-first century, SE started to become aware of the importance of human factors in engineering design. HSI of sociotechnical systems was born as a combination of HCD and SE. More specifically, HSI is intrinsically model-based, and concurrently considers Technology, Organizations and People (TOP) during the whole life cycle of a system (Fig. 3). This is the reason why the modeling framework shifted from single agent to multi-agent.

HSI requires a more formal definition of what a “system” is about. But before providing a definition, it is important to state that HSI opens the way

Human-Systems Integration,

Fig. 2 Evolution of human-centered technology approaches



it all, but by selecting relevant parts that make sense to us. Relevance is about meaning. We can talk about meaningful reality, and not about objectively sensed reality.

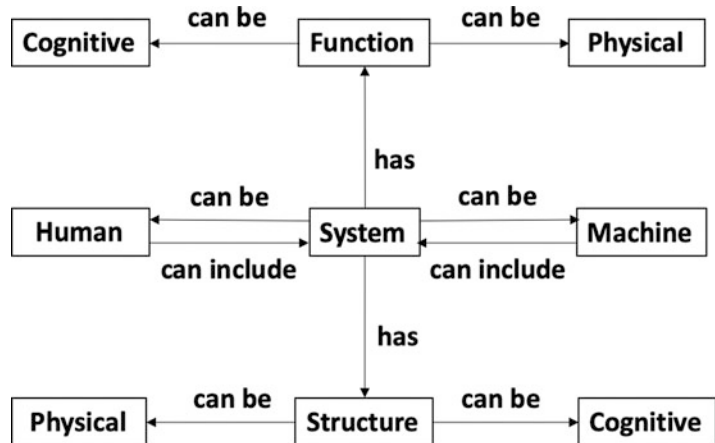
What Does the Term “System” Mean?

A system is a **declarative representation** of either a natural or an artificial entity. Natural entities can be human beings (e.g., human beings are open nonlinear systems in Klochko’s sense), organs of a human being (e.g., physicians talk about neurological system or cardiovascular system), plants and animals or organizations of them (e.g., the reproduction system of flowers by pollination associating bees; flocks of birds). An artificial entity can be an abstraction (e.g., an idea, a law, a method), an object (e.g., a chair), or a machine (e.g., a car, a washing machine) that was built by a human being to facilitate and support the execution of specific tasks. A system has at least a structure and a function (Fig. 4). It can be either cognitive (or conceptual), physical, or both (Boy 2017). Today, machines have cognitive functions (e.g., the cruise control function on a car enables the car to keep a set speed) and cognitive structures (e.g., interconnectivity within systems of subsystems such as an industrial company). Note that a human can include a machine (e.g., a human may have a pacemaker machine), and a machine can include a human (e.g., an aircraft includes pilots and passengers).

Human-Systems Integration, Fig. 3 The TOP model for Human-Centered Design

to a new multi-agent approach, in contrast with the single-agent approach provided by human information processing models (Newell and Simon 1971; Rasmussen 1986), to psychosociology, introducing an alternative to traditional linear approaches considering cognition and socio-cognition as sequential information processing. HSI considers from the outset that the systems are open, nonlinear, and self-organized in the sense of the theories proposed by Taleb on the one hand and Klochko on the other (Taleb 2007; Klochko 2007). Taleb proposed this new definition of systems from an extrinsic point of view (i.e., our environment can be considered as an open nonlinear and self-organized system). Klochko proposed an intrinsic point of view (i.e., our cognition can be considered as an open nonlinear and self-organized system). Klochko’s proposal follows stages of child’s development proposed by Piaget (1936), and the selective property of our mind proposed by Vygotsky (Vygotsky et al. 1993). Our brain is able to process gigantic amount of information, not by processing

Human-Systems Integration, Fig. 4 The cognitive-physical structure-function representation of a system



In addition, the conventional single-agent definition of a system function as something that transforms an input into an output should be extended to a multi-agent perspective. In the teleological multi-agent sense, a system function is defined by three attributes:

- A role
- A context of validity
- A set of possible and necessary resources

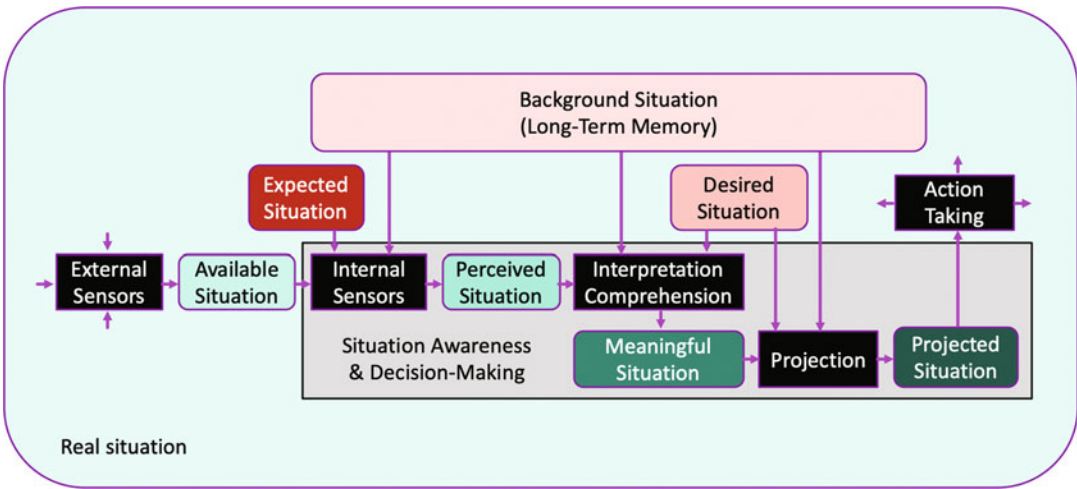
At this point, it should be noted that the concept of “system” commonly used in systems engineering is very similar to the concept of “agent” in artificial intelligence and cognitive science. For example, a postman is an agent of an agency that is commonly called “The Post”. The post can be represented by system of systems, where the postman is a system. A typical postman’s function can still be defined as having a (prescribed) task of “delivering letters” (i.e., function input). His/her activity (i.e., function output) may not always reflect such a prescribed task because the context may change, either his/her capacity may intrinsically change (e.g., the postman is tired or sick), or environmental factors may extrinsically change (e.g., heavy rain or excessive traffic).

Context of validity of postman’s role (i.e., delivering letters) can be defined by a time context (e.g., from 8:00 am to noon, and from 2:00 pm to 5:00 pm) and a space context (e.g., the neighborhood where he/she has to deliver letters). Context can be normal (i.e., the same job every day) or

abnormal (e.g., some other postmen are not available and the postman in duty needs to expand his/her time and/or space context). Postman’s resources can be physical (e.g., a bag and a bicycle) or cognitive (e.g., a pattern-matching cognitive function that enables him/her to put each letter in the right mailbox, matching the name of the street, the number of the house and the name of the addressee). At this point, it becomes clear that a function is a function of functions (e.g., “delivering letters” is a function of another function, the “pattern-matching” function). More generically, function’s resources are systems, which can be either physical, cognitive, or both. This representation is very convenient for function allocation in a SoS (i.e., among systems [or structures] in a network of systems).

Various Types of Situations for Context Management

The term “situation” is commonly used to denote something that happens, such as an event, a state of affairs of someone, a location or a process at a particular time, or a context that specifies a set of persistent conditions. A situation can be a generic pattern, or an episodic set of conditions. Summarizing, we will consider that a situation is defined by a set of states, in the common sense of control theory. More formally, a situation S may refer to a dynamic set of states (i.e., a situation varies in time), $S(t) = \{s_i(t); i=1,n\}$, including multiple



Human-Systems Integration, Fig. 5 Various interconnected human-centered meanings of the situation concept

derivatives, in the mathematical sense, such as velocity and acceleration (i.e., a situation is not only a static description, but also an evolution).

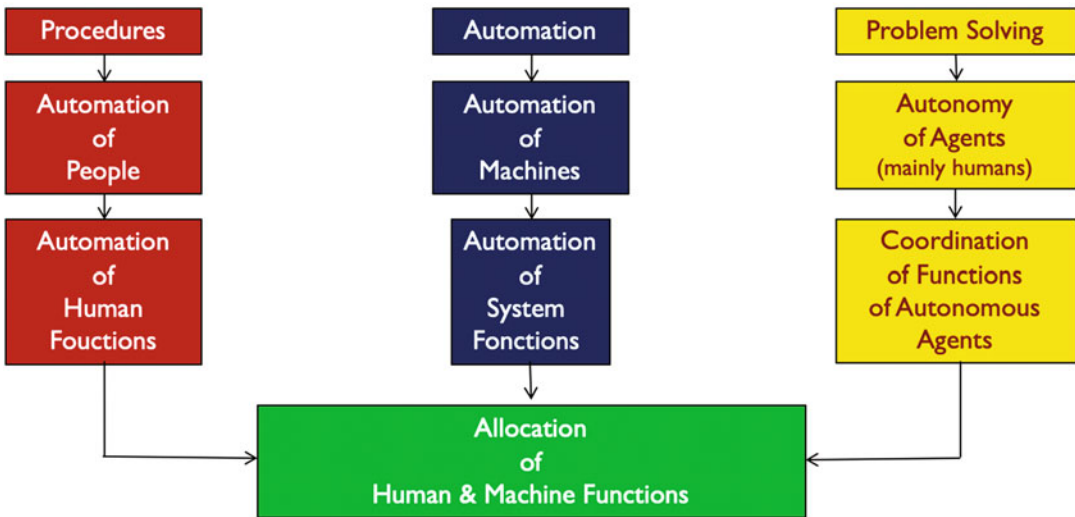
Following what Mica Endsley already described in her situation awareness model, the perceived situation also needs to be understood at a conscious level (Endsley 1995a, b, 1998; Endsley and Garland 2000; Boy 2015). The concept of situation has several interrelated facets (Fig. 5): the “real situation” is characterized by an infinite number of highly interconnected states; the “available situation” is characterized by a set of states available to a human observer through external sensors; the “perceived situation” is a subset of states of the “available situation,” directed, augmented, and/or transformed by what is being expected (i.e., the “expected situation”) and the long-term memory of the agent (i.e., the “background situation”); the “expected situation” supports event-driven behavior (i.e., what we anticipate); the “meaningful situation” is a subset of the “perceived situation” augmented by the “desired situation” (i.e., what we want to do) and the background situation (i.e., directed by experience and habits); we can talk about an interpretation process at this point; the “desired” situation expresses a goal-driven behavior (e.g., what we want to get from what are doing in the current situation); the “projected situation” can then be considered as a subset of the meaningful situation

augmented by the background situation (e.g., experience and habits).

Systems as Resources: The Multi-Agent Paradigm Shift

For a long time, engineering schools taught linear algebra as a major mathematical package for future engineers. Very little attention has been brought to nonlinear models and complexity science. Consequently, engineers tend to think linearly. In addition, human and social sciences tend to adopt most popular mathematical models for data analysis, mostly in statistics (e.g., linear regression). It is not surprising that both worlds (i.e., engineering and human factors) have difficulties when nonlinearities occur in the course of industrial or life-critical operations (Boy 2021). The Taleb’s Black Swan metaphor is interesting to consider here because it encapsulates the concept of human antifragility that involves signals for homeostatic processes that fight to keep the overall system safe and working (Taleb 2007¹). In other words, in everyday practice, moving from linear to nonlinear consists in moving from

¹A second edition, published in 2010, provided a new section on robustness and fragility; ISBN 978-081297381.



Human-Systems Integration, Fig. 6 Procedures, automation and problem solving leading to the allocation of human and machine functions (Boy 2020)

procedure following, to cooperation with machine automation to problem solving (Fig. 6).

Many complex systems and complex situations cannot be reduced to simple linear systems or situations, we need to get familiar with them in order to understand them and adapt to them. The opposite concept of complexity is not only simplicity, it is also familiarity. For example, when you move from one location to another for living, you are likely to find the new location very complex to navigate in it, but after a few months, you become familiar with it, locating the bakery next to the shoemaker, and so on. The more familiar you become with the new location, the more you find it simple to navigate in it. What really happens relies on the network of shops, streets, roads and houses and their interrelations (i.e., their systemic structures and functions). When you have become familiar with nodes and links of this network, everything becomes so simple! Therefore, instead of avoiding complexity by reducing it to linear models, it is crucial to learn about this complexity (i.e., become familiar with it).

In many situations (i.e., normal, abnormal, and emergency), human operators of life-critical systems typically follow procedures and/or use machine automation. However, outside of such procedures and automation definition contexts,

human operators have to directly solve problems. In these cases, they need to have enough autonomy to handle current situations correctly.

What do we mean by autonomy? Being autonomous requires knowledge, experience and sometimes boldness. When these requirements are not present, human operators have to get external assistance. This is where the multi-agent approach enters into play. An autonomous system is necessarily a multi-agent system, because it is equipped with the necessary agents that are capable of following appropriate procedures, using automated tools, and solving problems at hands, either intrinsically (e.g., a mountaineer who learned and trained enough to have necessary knowledge and skills to climb a difficult peak) or extrinsically (e.g., a team of aerospace engineers and astronauts that has all necessary knowledge and skills to solve a problem in a spacecraft such as in Apollo 13 successful accident). An excellent illustration is the experience of Apollo 11, when Neil Armstrong landed on the Moon (Mindell 2008). An intrinsic multi-agent system is not equivalent to a single-agent system because it is equipped with a “team” of sub-systems working together (e.g., functions working not only in sequence as a classical information processor, but also in parallel, cooperatively and/or competitively). An extrinsic

multi-agent system is what we usually call a multi-agent system for short.

The distinction between automation to autonomy deserves to be better understood. Automation is about defining, developing, and using procedures defined in a specific context. Automation deals with a close, linearized and rigid world. It is usually thought as a single-agent system. Autonomy is about incremental learning of experience in multiple contexts and handling expected as well as unexpected situations using intrinsic knowledge and skills and dedicated extrinsic support. Autonomy deals with an open, nonlinear, and flexible world. Consequently, it is about trust, collaboration, and self-organization. It is typically thought as a multi-agent system.

A first solution is to consider models the systemic interaction models (Boy 2020): supervision; mediation; and cooperation. Considering these three systemic interaction models, combined with procedure following, cooperation with automation and problem solving (Fig. 6) contributes to a useful multi-dimensional multi-agent model that should also consider that agents can be working together toward a same goal or the opposite. We are facing an epistemological question of defining how multi-agent systems work. A specific answer to this issue was provided in system science by Bernard-Weil who proposed the agonistic-antagonistic paradigm that combines cooperation and competition of two groups of agents (Bernard-Weil 2003). Bernard-Weil studied the dynamics of agonistic-antagonistic bio-medical networks to better understand emerging phenomena, and types of control when unbalances between the two groups of agents occur. Further work should be devoted to this fundamental question. In the meantime, let us concentrate on a method that enables the elicitation of knowledge useful for giving life to such multi-agent systems.

Associating Procedural and Declarative Knowledge: The PRODEC Method

The association of the situational framework defined in section “[Various Types of Situations for Context Management](#)” together with the

system declarative representation provided in section “[Systems as Resources: The Multi-Agent Paradigm Shift](#)” leads to what is denoted “context-resource orthogonality” (i.e., the articulation of procedural and declarative knowledge). Procedural knowledge is about timeline of events and actions (e.g., stories, episodes, scripts, procedural scenarios), and describes meaningful situations. Declarative knowledge is about multi-agent organizational structure-function models and describes resources as systems. Procedural and declarative knowledge respectively denotes what is functionally and structurally possible.

Cognitive psychology and computer science cross-fertilized each other for a long time. Indeed, procedural knowledge and its distinction with declarative (or conceptual) knowledge has been developed in several fields related to cognition such as educational science (McCormick 1997) and development psychology (Schneider et al. 2011), including mathematics education (Star 2005; Hiebert and Lefevre 1986; Carpenter 1986), user modeling (Corbett and Anderson 1994), and an experimental psychology (Willingham et al. 1989; Lewicki et al. 1987; Richard 1983).

The theater metaphor helps figuring out what the PRODEC method is about (Boy et al. 2020). First, a writer produces an essay that tells a story, available in a procedural manner. Then, a director selects, in a declarative manner, actors who have to read the essay and learn their roles and scripts procedurally and coordinates them. PRODEC has been designed to be used in HCD to benefit from both operations experience (i.e., human operators will be asked to provide their salient operations stories) and definition of objects and agents involved in the targeted human-machine system to be designed (i.e., the design team will provide prototypes at various progressive levels of maturity). PRODEC consists in using the following procedure:

1. Elicit and review all tasks involved in the achievement of various goals
2. Describe them as procedural scenarios
3. Elicit cognitive (and physical) functions in the form of role (associated to tasks and goals), context, and associated resources (declarative scenarios)

4. Describe and refine elicited resources in terms of structures and functions (using the formalism presented in Fig. 4)
5. Iterate until a satisfactory solution is found

Procedural knowledge is elicited from subject matter experts in the form of chronological scenarios, together with system-of-systems performance criteria for the assessment of accuracy, impact, and probability of collaboration and trust, for example. System performance relies on the articulation of three factors encapsulated within the *AUTOS Pyramid*² (Boy 2011).

Tangibilization deals with system's physical and figurative (or cognitive) tangibility assessments (i.e., the fact that we can grasp a system physically and figuratively). Figurative tangibility is about meaningfulness. Domain ontology, or system ontology, can be divided into functional ontology and structural ontology.

Conclusion

This entry of the Palgrave Encyclopedia of the Possible proposes a fundamental approach to human-systems integration (HSI) from a psychology and social sciences perspective, associated to useful concepts, methods, and tools for its development. HSI deliberately takes a long-term perspective, where possible futures are anticipated and tested from the very beginning of the life cycle of a sociotechnical system. HSI contrasts with the traditional engineering approach that necessarily considers causal prediction of short-term futures. HSI is both a process and a product, which should take place as early as possible during the design process and evolve during the overall life cycle of the product. Being able to observe activity at design time is a brand-new capability in engineering design, because modeling and virtual prototyping means are now available and realistic enough to support human-in-the-loop simulations.

Human-centered design combined with agile systems-of-systems engineering approaches,

effectively supports HSI. Indeed, technology, organizations, and people must be considered concurrently during the whole life cycle of a system in which functions can be incrementally allocated to more appropriate agents with respect to appropriate principles and criteria. This means that HSI is no longer a matter of adapting people to machines by crafting, often too late, user interfaces and operations procedures, but an integrated approach based on the system-of-systems concept that integrates people and machines into articulated sociotechnical systems. In fact, HSI theory is far from being fully developed, and requires more formal investigations and heuristic experimentations. More specifically, HSI dictates that improving autonomous complex systems requires improving autonomy for all stakeholders, including people and machines.

HSI requires more investigations based on complexity science and system science, where concepts and issues, such as emergence, separability, and complexity familiarity, should be further explored. Finally, HSI developed using digital twins should be based on strong tangibility principles, scenarios, and assessment criteria, properly defined along five directions: complexity, maturity, flexibility, stability, and sustainability. Number and content of these dimensions will be probably extended with respect to ongoing engineering design, research, and innovation developments.

Cross-References

- [Anticipation](#)
- [Consciousness](#)
- [Creativity](#)
- [Heuristics](#)
- [Reality](#)
- [Simulation](#)
- [Virtual Reality](#)

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² Artifact, User, Task, Organization and Situation.

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Humor

Sonja Heintz and Jennifer Hofmann
University of Zurich, Zurich, Switzerland

Keywords

Humor · Incongruity · Nonsense ·
Playfulness · Wittiness · Incongruity-
resolution · Creativity · Irony

Definition

Humor comprises, in its broadest definition, *everything* related to the funny. This includes how humor is perceived, appreciated, and produced by individuals, but it also includes humorous stimuli (texts, cartoons, jokes, situations) and their properties. The concept of incongruity is postulated as a central element of humor in many theories and models; as such, humor is inherently related to the possible. The present chapter first defines humor and gives a brief overview on humor theories. Then, the family of incongruity-resolution theories of humor and the wittiness model of humor are described, as they are particularly relevant for understanding the relationship of humor and the possible. Next, the relevance of individual differences in humor and aspects of humor development are discussed. Then, empirical findings on humor and humor interventions are presented briefly. The final section explores the links between humor and the possible from five perspectives: playfulness, creativity, (in)tolerance of ambiguity, as-if behaviors/irony, and changing perspectives. Overall, the possible is a central aspect of humor, and humor can be seen as a playground for the possible and the impossible.

Definition and Theories of Humor

Humor is a term that had different connotations throughout history and that is still used with different meanings nowadays (Martin and Ford 2018; Ruch 2008; Ruch et al. 2018). The most prevalent interpretation of the term humor in current research is as an umbrella term that entails all funny or comic phenomena (see Roeckelein 2002). Thus, humor in this broad sense comprises whether people recognize humor (e.g., if they understand that an utterance is meant ironically rather than literally), how they comprehend humor (e.g., interpret a sexual innuendo in an innocent or in a sexual way), to what extent they appreciate humor (e.g., how funny, aversive, or boring they find a joke), which humor they produce, and how they communicate it (e.g., telling long and complicated anecdotes, imitating accents, parodying other people, criticizing problems in a funny way).

When looking at humor “theories,” one finds different theoretical accounts dating back to ancient philosophers such as Plato and Aristotle. What is most striking about these theories and ideas is their heterogeneity with respect to the aspects they are explaining and the fact that there is no theory that explains “humor” in its totality. In an early review, Keith-Spiegel (1972) differentiated between eight families of humor theories (note that for most accounts, different variants exist that also evolved over time, and thus we rather speak about families of theories). Adapting her categorization, we differentiate between seven families of theories. All of these families of theories focus on certain aspects of humor: Some focus on the properties of humorous stimuli, and others focus on aspects of humor processing or responses to humor. A few authors also tried to integrate some of these families of theories (e.g., Suls 1977).

1. Biological accounts and theories that assume that humor/laughter evolved as a means of nonverbal communication or to serve social functions, such as signaling safety and vocal grooming (i.e., producing pleasing sounds). These theories focus on the functions of humor and laughter over the course of

- phylogenetic development (i.e., evolutionary changes).
2. Superiority theories assume that laughter arises from the perception of being superior to others, and thus laughing at others serves as an enhancement of one's own ego. These theories focus on explaining emotional and motivational aspects of laughing at others (for an overview, see Ferguson and Ford 2008).
 3. Incongruity theories focus on explaining the cognitive mechanisms of humor processing or the structural properties of humorous stimuli. Incongruity denotes something that is unexpected and/or "does not fit," which is also labeled a violation or incongruence of what is expected or "normal." These theories focus on what makes a stimulus funny in terms of cognitive and structural "ingredients" and the stages of cognitive processing necessary in order to understand humor; for example, they would describe how a joke "works" and how a person would perceive, interpret, and react to the joke. Importantly, incongruity has been recognized as a necessary, but not sufficient ingredient in humorous stimuli (for more extensive explanations, see Forabosco 2008).
 4. Configural theories are a variant of incongruity theories that give more weight into the *insight* into how elements, configurations, or thought patterns, which are seemingly unrelated, fit together to become the source of amusement (i.e., the Gestalt, the holistic perception of the configuration). These theories thus focus on the "bigger picture" that is conveyed by jokes, cartoons, and other humor stimuli.
 5. Surprise, ambivalence, release/relief, and violation-based theoretical accounts describe the importance of the respective elements for the experience of humor and emotional responses to it. These theories also focus on humor processing and the properties of humorous stimuli, but postulate specific important "ingredients." For example, surprise might be a necessary, but not a sufficient, element for experiencing humor (e.g., surprise about the punch line).
 6. Psychoanalytic theories focus on the explanation of how humor, wit, and the comic can serve to regulate psychic energy and make

explicit reference to psychoanalytic theory and thinking in general. For example, Freud (1905, 1928) described humor as a mature defense mechanism that should help to deal with negative experiences by allowing an expression of inappropriate drives in an appropriate (humorous, playful) way. Freud also dissected jokes and explained them with various cognitive (e.g., exaggeration, hyperbole) and affective mechanisms (e.g., sexual and aggressive contents).

7. Linguistic theories mostly deal with the properties of humorous stimuli, such as the *Semantic Theory of Humor* (Raskin 1985) or the *General Theory of Verbal Humor* (Attardo and Raskin 1991). These theories try to comprehensively explain the ingredients and properties of verbal humor, including the targets (i.e., who is the "butt" of the joke) and the logical mechanisms (i.e., how the joke "works").

Incongruity Theories of Humor, Humor Processing, and Humor Production

Particularly important to the understanding of the possible is the family of theories often referred to as "incongruity-resolution" theories (for an overview, see Ritchie 2018). They emphasize cognitive processes underlying humor, including structural properties of funny stimuli or the ways in which individuals process such stimuli. Although these theories differ in their terminology, their core premises are very similar: Humor is postulated to contain at least one incongruity that is perceived in Step 1. This incongruity usually results from a "mismatch" between the joke setup and the punch line, as the latter is unexpected. Step 2 consists of a full or partial resolution of this incongruity (e.g., Suls 1983; Wyer and Collins 1992). It is assumed that people go back to the joke setup and reinterpret it to make it fit to the punch line, for example, by changing their interpretation of a specific word or expression. If this mismatch cannot be fully resolved and there is still something left over that does not make sense, then we speak of a partial resolution.

What distinguishes humor processing from other types of problem-solving is the playful frame of mind (also labeled a “non-bona fide mode”; see Raskin 1985) in which these stimuli are perceived; that is, the humor stimuli are non-consequential and thus constitute a safe, benign, and non-threatening environment in which these incongruities can be explored (Suls 1983; Warren and McGraw 2016). Depending on the two steps of humor comprehension and the frame of mind in which the stimuli are processed, humor can then be more or less appreciated in Step 3. While humor appreciation is linked to prior comprehension, the two are still separate processes (see Chan et al. 2012, 2013; Ruch and Hehl 2007). For instance, one can understand a joke (i.e., successful humor comprehension) but not find it funny (i.e., lack of appreciation). Conversely one might not get the punch line of a cartoon (lack of comprehension), but one still finds something else about it that is perceived as funny (e.g., the drawing style or the facial expressions of the protagonists in the cartoon).

In comparison to humor processing (i.e., comprehension and appreciation), the production of humor has been less well studied (for an overview, see Ruch and Heintz 2019). Humor production targets the generation of something funny, ranging from spontaneous utterances in daily conversations (e.g., jokes, puns) to professional performances (e.g., comedians, improv comedy). None of the abovementioned families of humor theories explicitly target humor production, and only one model attempted to explain the different steps underlying humor production: Feingold and Mazzella’s (1993) multidimensional model of wittiness. The model comprises three stages: One first needs to be motivated to produce humor (humor motivation), then one needs to be able to generate humor (humor cognition), and finally this humor response needs to be uttered (humor communication). Feingold and Mazzella (1993) propose that different processes underlie these three stages, with humor cognition being linked to cognitive abilities (e.g., verbal intelligence) and humor motivation and communication being more closely related to personality and temperament (e.g., sociability) and the situation (e.g.,

appropriateness of humor in the situation, audience).

Individual Differences and Developmental Aspects

While the above outlined theories and models seem to propose a rather uniform scheme in which humor is processed and produced, it is important to note that considerable individual differences exist, both between persons and within a person. For example, people differ with respect to the humor they appreciate: Some people have a preference for simpler, easier to solve forms of humor (incongruity-resolution), others have a preference for more abstract and sophisticated humor that contains incongruities that cannot be resolved or that can only be partially solved (nonsense), and yet others have a preference for humor that contains a specific content such as sex or aggression (Heintz 2019; Ruch 1992; Ruch and Hehl 2007). Furthermore, people differ in the humor they produce, ranging from benevolent to mocking and from simple to sophisticated forms of humor (Ruch et al. 2018).

Additionally, humor processing and production change throughout the life span. Cognitive development theories (for overviews, see Bergen 2018; Hoicka and Akhtar 2012) postulate that humor co-develops with increasing knowledge, reasoning, and linguistic abilities. With the increasing cognitive capabilities of children, the humor they appreciate and produce becomes more complex as well. Once a cognitive schema is developed, the child can recognize occurring incongruities (starting from actions to words and concepts). In addition to these ontogenetic aspects (i.e., development within a species), the phylogenetic development of humor (i.e., evolutionary perspective across species) is relevant as well. As summarized by McGhee (2018), humor is not only understood, appreciated, and produced by humans but also by chimpanzees and gorillas; for instance, after learning sign language, great apes intentionally mislabeled objects to their caretakers, followed by a play display.

Research on Humor and Humor Interventions

The different families of incongruity-resolution theories received ample empirical support from different disciplines in psychology, including social psychology (e.g., Warren and McGraw 2016), cognitive psychology (e.g., Suls 1983; Wyer and Collins 1992), and neuropsychology (e.g., Chan et al. 2012, 2013). This research has shown that most humor is indeed dependent on incongruities and a (partial) resolution, which indicates that the circumstances are safe. Additionally, Chan et al. (2012, 2013) found that the three stages of humor processing (perceiving, resolving, and appreciating the incongruity) are routed in different areas of the brain, supporting that they rely on different neuropsychological processes. Similarly, Feingold and Mazzella (1993) showed that their different steps in humor production were related to different outcomes; that is, humor recognition and production were more strongly related to ability than humor communication, and the reverse pattern was found for relationships with personality and temperament (e.g., sociability).

Importantly, these studies mostly relied on dedicated verbal (jokes) and visual (cartoons, pictures) humor stimuli. Thus, the external validity (i.e., transfer to spontaneous humor in everyday life; see Craik et al. 1996) and boundary conditions (e.g., what is required to be a “safe” situation) of these theories still remain to be tested. Furthermore, no theories have yet covered the full humor process, from perception, comprehension, and appreciation to motivation, cognition, and communication. Importantly, these theories do not yet account fully for individual differences; for instance, different people likely require different levels of resolution to appreciate humor (see Ruch 1992), and the kinds of incongruities (i.e., appropriate incongruities, Oring 2003; possible and impossible incongruities, Rothbart and Pien 1977) that are preferred might differ between people and within the life span. Furthermore, the same humorous stimulus can be differently interpreted depending on the situation in which it is presented and depending on the current mood

(i.e., humor states); for instance, one would expect the same joke to be more appreciated in a relaxed social setting with friends than in a more serious or demanding situation (e.g., an exam or a business meeting). Such an integrative account of both general processes and individual differences is required to fully understand how “humor works.” This would also enable to understand how the different steps and stages mutually influence one another and whether their interplay differs between people (e.g., degree of comprehension needed to appreciate humor) and situations (e.g., mood, situation characteristics, situation norms).

Although it is often assumed that some people just have a sense of humor and others do not, research has shown that humor can be trained (for an overview, see Ruch and Hofmann 2017). A variety of trainings have been developed and tested in the literature, comprising individual or group-based, personal or online, and standardized or ad hoc trainings. The best-evaluated program is Paul McGhee’s 8-week 7 Humor Habits Program (2010; for an overview, see Ruch and McGhee 2014), which can enhance one’s sense of humor, playfulness, and cheerfulness and lower one’s seriousness. In addition to increasing humor, these interventions can also enhance psychological well-being (see Hofmann and Ruch 2019).

Humor and the Possible

Humor is connected with the (im-)possible regarding several different aspects: playfulness and playing with ideas (see also the chapter on Play, this volume), creativity (see also the chapter on Creativity, this volume), (in)tolerance of ambiguity, as-if behaviors and irony (see also the chapter on As-if thinking and Irony, this volume), and changing perspectives. It should be noted that the individual standards of what is interpreted as humor and as possible and impossible differ depending on the situation (e.g., mood, cultural and societal norms, audience), individual characteristics (e.g., abilities, temperament, personality, sense of humor, disorders), and the developmental stage (e.g., cognitive and emotional development

of children). We thus focus on the general overlap of humor and the possible in these concepts, while acknowledging that the standards of what is possible and what is funny differs within and between persons and may change over time.

To be able to perceive humor, individuals need to be in a certain frame of mind (or state). It is conducive to humor if individuals are in a relatively relaxed, stress-free frame of mind and motivational state (or alternatively, they need to be willing to switch into such a state of mind). Individuals are more likely to detect and process humor in a playful frame of mind (rather than a serious frame of mind; see McGhee 1979) or if they are in a paratelic (i.e., activity-oriented, playful) motivational state (as opposed to a telic motivational state; Apter 2001). Humor was claimed to involve a non-bona fide rather than bona fide mode of communication (see the work of Raskin 1985). This playful and non-serious frame of mind allows us to play: to play with language, ideas, and concepts. For example, being in a playful mood helps to understand and appreciate punch lines, as not only the logical consequence of a joke setup is expected or favored, but instead different explanations that could (partially) explain a punch line are sought for. Similarly, a playful mood could help to create more and better punch lines by exploring different ways a joke can yield an unexpected, yet somewhat plausible resolution. Playfulness has been shown to be strongly related, albeit not synonymous with humor (see Proyer 2018 for an overview). This differentiates humorous communication from most other forms of communications we use, which is based on serious, goal-oriented, rational thinking and speaking.

Creativity is usually defined as creating novel and useful solutions (also labeled “divergent thinking” as compared to convergent thinking, which is traditionally considered “intelligence”). Humor, especially spontaneous witty humor creation, is often conceptualized as an aspect of creativity (for an overview, see Ruch and Heintz 2019). Creating humor without time constraints (e.g., writing punch lines to a captionless cartoon) is an inherently creative task, especially when participants create novel punch lines or combine

existing punch lines into new ones on the spot (as in improv comedy, see the chapter in this volume). In other words, spontaneous humor production essentially entails testing different, potentially suitable possibilities (quantity or fluency aspects) and eventually selecting the best and funniest possibility (quality aspect).

(In-)tolerance of ambiguity (i.e., liking or disliking stimuli, behaviors, and experiences that have more than one meaning or interpretation) is a personality trait that has already been related to humor in the 1980s (for an overview, see Ruch 1992). The direction of the relationship depends on the humor structure: Preferences for incongruity-resolution humor (i.e., punch lines that can be fully resolved) were related to intolerance of ambiguity, while preferences for nonsense humor (i.e., punch lines that cannot be fully resolved) were related to tolerance of ambiguity. Tolerance of ambiguity accommodates different possibilities, while its opposite spectrum favors a single, logical possibility. At the same time, nonsense humor incorporates the idea of impossibilities; that is, the punch lines do not have to make perfect sense, but they can entail fantastic, illogical, and unrealistic incongruities (e.g., talking animals, alive objects) as well as multiple incongruities that increase the ambiguity of the stimuli. These elements are not entailed in incongruity-resolution humor, reducing the range of possibilities entailed in such humorous stimuli.

As-if behaviors and irony, which are related to the histrionic self-representation style (Renner et al. 2008), occur if a person does something that is different from what they actually mean. In contrast to lying, the person expects the audience to understand that the behavior or utterance is not meant to be taken literally, but that the observed meaning differs from the implied or symbolic meaning. For example, a child could pretend that a banana is a phone by holding it close to their ear and speaking into it, or a speaker could say that it is a lovely weather when it is actually pouring rain outside. While as-if behaviors and irony are inherently related to the possible, they are not inherently funny or humorous, though they can serve as vehicles to create amusement for oneself and the audience.

A final overlap between humor and the possible is the change of perspective that humor can encourage. A humorous worldview is an attitude that is speculated to be at the core of humor (Freud 1928; Martin and Lefcourt 1983; Ruch and Heintz 2016). This humorous world view entails a broadened perspective and thus a distance from everyday experiences, thereby allowing to consider different possibilities underlying a situation. This can help to solve problems, to alleviate stressors, and to achieve a more nuanced and light-hearted perception of the world.

Conclusion

This chapter showed where humor overlaps with the possible, based on theories of humor processing (incongruity-resolution theories), wittiness, and cognitive development and on constructs that capture elements of both humor and the possible (i.e., playfulness, creativity, tolerance of ambiguity, as-if behaviors/irony, and changing perspectives). While we highlighted the similarities between humor and the possible, especially from a cognitive perspective, it should also be mentioned that humor has unique social and affective elements, such as its entertaining (e.g., comedians, improv comedy), socializing (e.g., in-group cohesion by shared humor and laughter), corrective (e.g., satire, parody), and mocking (e.g., bullying, ridiculing) qualities.

Beyond this general introduction, the interested reader may also consider the relationship of humor and the possible with respect to verbal humor and its possible or impossible translation. This important topic to linguists and experts of translation studies has received growing interest over the past three decades. Here, it shows that translating elements of the possible from one language to another pose many difficulties and may also be impossible in some case – and funny utterances in one language may not be translatable at all or turn out unfunny in other language contexts (see Attardo 2017; Maitland 2017; for an overview, see Hofmann and Rodden 2019).

Cross-References

- Creativity
- Play

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Hypothesis

Martin W. Bauer

Department of Psychological and Behavioural Science, London School of Economics and Political Science, London, UK

Keywords

Supposition · Rhetoric · Dialectic · Public reasoning · Theory of perception · Model of the mind · Heuristic · Scientific method · Monologicality

Definition

The word “hypothesis” is of ancient Greek origin and composed of two parts: “hypo” for “under,” and “thesis” for “to put there”; in Latin, this translated “to suppose” or “supposition”; made up of “sub” [under] and “positum” [put there]. It refers to something that we put there, maybe to start with, maybe to stay with us as an installation. Hence in modern English we say “*let us hypothesize, suppose,*” or “*let us put it that . . . ,*” and then we start the argument by developing implications and reaching conclusions. The term “hypothesis” marks a space of possibilities in several ways. Firstly, it is the uncertain starting point from which firmer conclusions might be drawn. Public reasoning examines how, from uncertain hypotheses, neither true nor false, we can nevertheless reach useful conclusions. Secondly, the hypothesis is the end point of a logical process of firming up on reality through scientific enquiry. Scientific methodology makes hypothesis testing the gold standard of enquiry. Thirdly, hypothesis is a point of transition that calibrates perception and social interaction. Psychological science turns hypothesis testing into a model of the mind. And finally, hypotheses might be part of a monological ritual of reasoning that distracts from reaching a common understanding about the world and its utopian possibilities.

In the “*Man Without Qualities*,” the writer Robert Musil puts it into the title of Chapter 4

“*Where there is a sense of reality, there must be a sense of possibility.*” It seems that we cannot have reality without acknowledging other possibilities, without the imagination that things can be entirely different but for some reasons are not. Reality is framed by possibility, and it is imagination that opens this space of contingency. But we must then ask immediately, how do possibilities arise in the first place?

The word “hypothesis” is of ancient Greek origin and composed of two parts: “hypo” for “under,” and “thesis” for “to put there”; in Latin, this translated “to suppose” or “supposition”; made up of “sub” [under] and “positum” [put there]. It refers to something that we put there, maybe to start with, maybe to stay with us as an installation. Hence in modern English we say *let us hypothesize, suppose, or “let us put it that . . . ,”* and then we start the argument by developing implications and reaching conclusions.

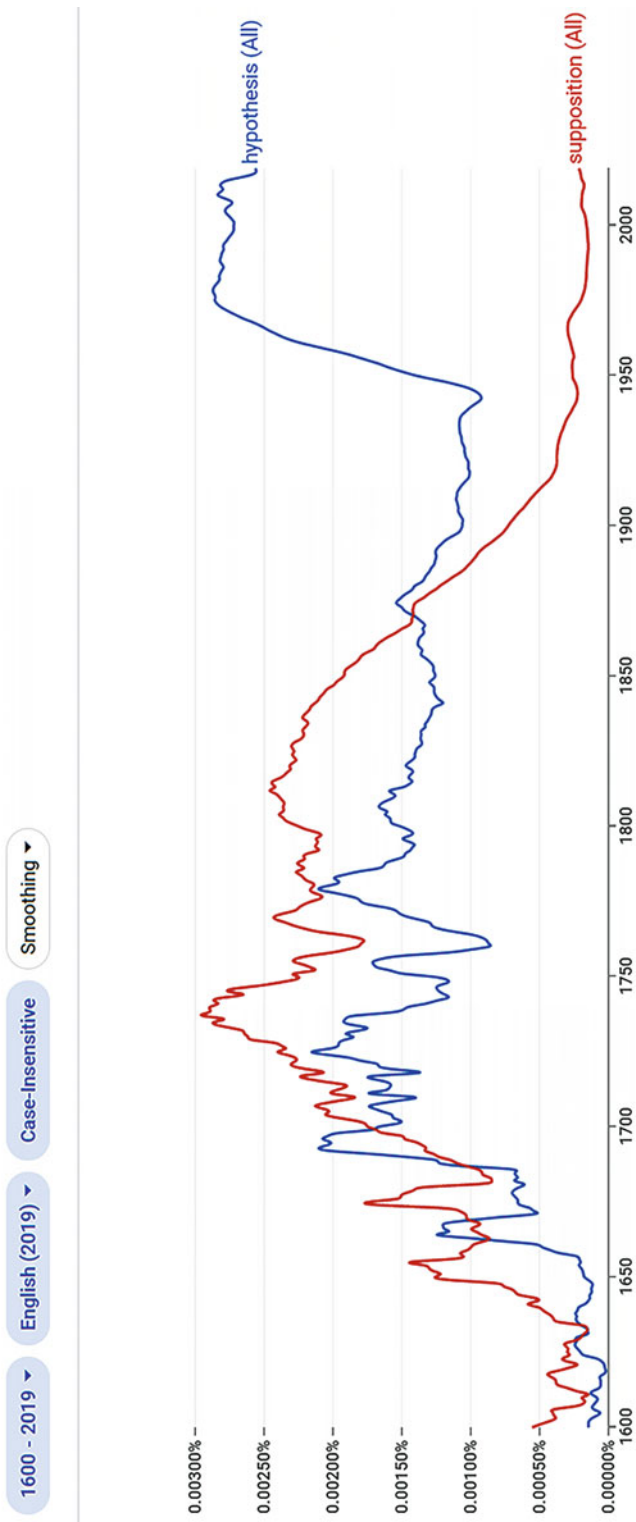
One can trace a term with Ngram Viewer, which, based on millions of English books, visualizes how keywords fall in and out of fashion. Figure 1 shows the relative salience of “hypothesis” and “supposition” since 1600. Both terms were in higher use between 1700 and 1850 and then fell out of favor; later after 1950, only the “hypothesis” regained currency and stabilized in the 1980s at a level of higher usage.

In this entry, the notion of “hypothesis” denotes a space of possibilities in three different contexts without any claim to being comprehensive.

- (a) Public reasoning examines how, from uncertain hypotheses, neither true nor false, we can nevertheless reach useful conclusions.
- (b) Scientific methodology makes hypothesis testing the gold standard of enquiry.
- (c) Finally, psychological science turns hypothesis testing into a model of the mind.

Hypothesis in Public Reasoning

An ancient classification of reasoning is based on whether we start with premises that are true, or



Hypothesis, Fig. 1 Ngram Viewer for keywords “hypothesis” and “supposition” as references in English books between 1600 and 2019 (accessed 15 Dec 2021)

from premises that are uncertain, or even untrue, but nevertheless lead to useful conclusions. Aristotle identifies the latter with dialectics and rhetoric, two formats of communication which come naturally so that “*ordinary people do this either at random, or through practice and from acquired habit*” (Barnes 1984, Rhetoric, 2152).

Pure syllogism comes to true conclusions from premises that are already true, famously, “All men are mortal” [Major, rule], “Socrates is a man” [Minor, case], “therefore Socrates is mortal” [Conclusion, result]. Such demonstrations are examples of deductive logic. Without any doubt on neither the Major nor the Minor, the conclusion is incontestable. From truth only truth can follow; the opposite is however not the case. **Hypothesis marks an uncertain starting point.** In order that from less than true, a truth can follow, some further considerations need to come into place. Dialectic and rhetoric seek to clarify in the case of everyday reasoning such conditions of hypothetical reasoning.

Dialectic is suited to the context of one person arguing with another, where the stronger argument shall prevail; we might recognize here the rationality that tends to prevail in a seminar discussion or a debate. Here interlocutors start with sentences such as “*let us suppose that . . .*,” “*let us assume that . . .*,” “*let it, for the sake of argument, be agreed that . . .*,” or “*let the hypothesis be made that . . .*” (Rescher 1964, p. 3). What is supposed is not an established fact, not further investigated; to the contrary the claim remains doubtful, possibly true or false [God exists?]; it can be wrong in common belief [John Lennon is alive]; and it can even be definitely false [Napoleon has won at Waterloo]. Such types of uncertainty are the basis of hypothetical reasoning (Rescher 1964, 4ff). Under the heading of “topics,” Aristotle listed suppositions which can be safely made in general or in particular contexts and which carry credibility without further examination, i.e., “*those opinions are reputable which are accepted by everyone or by the majority or by the wise . . . or by the most notable and reputable of them*” (Barnes 1984, p. 167). Important in everyday life, with contingency planning, we learn to remain prepared on how to shift to

plan B if conditions are changing. In thought-experiments, we trace the consequences of knowingly false assumptions. We might even play games with our imagination by extrapolating impossible assumptions in “what if” stories as in science fiction, while politicians avoid hypothetical questions “what if the PM resigns next week . . . ?.” Any answer to this question would reveal a position and give hostage to fortune; better wait until the situation arises. And modern public opinion research compares what are the common places of different strata of people; these sets of feasible arguments define at present social representations (Bauer and Gaskell 2008) or a historical mentality (Lloyd 1990, 135ff).

In rhetoric, by contrast, the hypothesis is unspoken, it is buried in the tacit communality that ground all rhetoric between speaker and listener/reader. Rhetoric takes place as civic discourse; speakers are addressing a larger audience in public. It is famously defined by Aristotle as “*observing in any given case the available means of persuasion*” thereby considering feasible arguments (logos), credibility of the speaker (ethos), and audience appeal (pathos; Barnes, “Rhetoric” 2155). We recognize here the rationality of the public sphere. The rhetorical argument is called “enthymeme,” a truncated way of arguing by saying not as much as to bore people, but nevertheless saying as much as to persuade; we must consider people who “*cannot take in at a glance a complicated argument, or follow long chains of reasoning*” . . . (ibidem, p. 2157) “*common places to be embodied in them*” and “*thus we must not carry its reasoning too far back, or the length of our argument will cause obscurity; nor must we put all the steps that lead to our argument, nor shall we waste words in saying what is manifest*” [ibidem, p. 2224]. Hence, somebody might seek to move people by claiming that *smoking is dangerous to your health [minor], therefore stop smoking! [conclusion]*. Whoever wants to move people to give up smoking needs to make sure that they work on safe ground that *people want to live a healthy life and live longer*. This is indeed the unspoken hypothesis [major, rule] which underpins the enthymeme urging you to give up smoking. The

common place “living a healthy life” is implicit; it is tacitly shared and mutually assumed in the discourse [I know that you know that I know . . .]. The enthymeme builds on the hypothesis; no need to enquire any further, for the sake of brevity to sway opinions. Only the analysis of the rhetorical situation brings the implicit hypothesis to light as the common ground on which the speaker is successfully working. What is unconscious might be made conscious; however, stating the “bleedingly obvious” could be irritating. Rather than challenging an explicit assumption, it is better to be left unexamined in order not to complicate an already pressing situation and a convenient framework for action.

While dialectic is concerned with epistemic truths, seeking to establish a plausible truth from uncertain, though explicit hypotheses, rhetoric has a practical remit of establishing what can be done under uncertain conditions and time pressures, whether somebody can be blamed for a state of affairs, or whether a person deserves our respect; and to achieve this, the hypothesis remains implicit. Modern rhetoric extends to the marketplace: advertising moves us to buy stuff in order to live a happier life of satisfied consumers.

Hypothesis in Scientific Methodology

The term “hypothesis” is part of the core language game of science: theory, model, measurement, data, research question, and hypothesis (Glass and Hall 2008). Often hypothesis is confused with model or theory, such as “biological evolution as a hypothesis” or “big bang as a hypothesis.” It is more useful to distinguish hypothesis derived from theory or model, which can be tested on data. A model represents the theory that gives rise to hypotheses (Frigg 2010). The hypothesis then becomes the research question reformulated in data terms. All this struggle testifies to historical anxiety of science vis-à-vis the imagination as a human faculty (Daston 2005); it needs to be domesticated like a wild animal to extract utility.

Scientists working experimentally are taught to frame their designs on Nature with a hypothesis about the effect of a controlled intervention; for

example, the effect of a drug to treat an illness, or a training protocol to increase performance, can be tested statistically for significance. The experimental design of treatment, controls, and outcome variables allows *ceteris paribus* to attribute causal efficiency from the intervention X to the outcome variable Y. The existence of an effect Y and the strength of the relationship X-Y are subject to prediction, i.e., the hypothesis based on a causal mechanism $X \rightarrow Y$. This type of “causality hunting” leads in the social sciences to a ritual of hypothesis testing; this frantic chase to reject null hypotheses of ill-defined effects has entered a “replication crisis”; social and psychological effects are not replicable as drug trials are (Scheel et al. 2020).

Harre (1985, 62ff) distinguishes a fictionalist from a realist account of **hypothesis as knowledge**. For the fictionalist, theories and models are entirely imaginary entities that allow to generate useful predictions to be tested on data. When different models equally fit the data, the choice between models is done on endogenous criteria such as coherence, beauty, or simplicity. For the fictionalist, planets do not exist beyond words [nominalists]; these entities allow us to formulate a theory of moving light points in the sky under an observatory. This kind of reasoning can proceed from manifestly false propositions and deduce a conclusion that is empirically true, for example: all humans are rational (F), and all rational creatures behave like this (F, Bayesian updating); therefore, rational humans behave like this (T) (see Harre 1985, p. 84).

For the realist, however, theoretical entities are more than “names” in the universe; they can be demonstrated by the gesture of pointing. The sun is not just the center of a planetary model; it can be pointed at in the sky; the same might be true for “behaving rationally,” it can be pointed out. The realist adheres to three principles: a) some theoretical terms refer to hypothetical entities, b) some hypothetical entities are candidates for existence, and c) some candidates for existence exit (Harre 1985, p. 99). This seems to be best illustrated by the microbial theory of bacteria and viruses. Bacteria and viruses infect and kill cellular organisms; they are not just convenient fictions predictive of

infectious complications and excess deaths during a pandemic.

Some of the entities referred in a theory or a model are hidden from sight, not (yet) directly observable, as **hypothetical constructs**. Famously, for a neo-behaviorist psychologist, minding is only a hypothetical construct producing a “cognitive map,” which explains how an animal successfully moves in a maze after reinforced trials. Such constructs mediate between observables, the antecedent conditions, and the performance. Statistical models help by deriving probabilistically latent traits or latent classes of objects, so-called latent variable models. Given antecedents and performances, we infer a hypothetical level of “intelligence.”

The **hypothetico-deductive method** is formally specifying hypotheses to reach explicit clarity and objective generality from a theory. This method was used by Johannes Kepler who had lots of observational data about moving planets, and he played in his mind with geometrical curves, where beginning and ends coincide. By thus playing with geometry, a deductive system of axioms, he came to consider an ellipsis rather than a circle, and he then derived predictions for elliptical orbits and low and behold the data fit the model and simplified things at the top of it. Henceforth, astronomers model planetary orbits in the geometry of ellipses rather than circles (Harre 1985, p37ff). Based on the authority of astronomy, the psychology imitated this way of reasoning for theories of learning (Foppa 1965, 33ff), heuristics and problem-solving (Groner 1978; Suppes 1983), and behavior (Lewin 1931, 1936). By contrast, behaviorists like Skinner utterly rejected hypothetical entities like “cognition” or “consciousness” as irrelevant and focused on observables with reinforcing effects on behavior. Intermittent reinforcement is most effective; the occasional “likes” on Twitter or Facebook will make us superstitious and crave for more.

A famous intervention in these matters states that hypothetical constructs are necessary to break superstitions, but prone to self-fulfilling verification; they can never be verified, only falsified. For Popper (1972, p. 37), this demarcates what is and what is not “science.” Science must generate propositions

that can be falsified. According to the doctrine of **falsificationism**, what does not fall under this criterion is unscientific. Hypotheses can arise from any form of imaginary, belief, or doxa; there are no rules or laws for their generation, but they need to be testable and tested. For this “critical realism,” Yoga, astrology, homeopathy, herbalism, psychoanalysis, conspiracy theories, or Marxism might contribute to knowledge provided they produce testable predictions in their area of observation; otherwise, they are nothing but pseudo-scientific superstitions. Feyerabend (1981, p. 194) traces this idea to John S Mill, who in the nineteenth century advocated that the procedures of science are “*not to praise what is good, but to eliminate what is bad, or comparatively inferior,*” thus making a link to ideas of evolutionary selection and survival of the fittest in the test. However, not every falsification challenges a hypothesis; counter evidence must accumulate before it breaks the imaginary of the scientific community (Peters 2013).

Another understanding of hypotheses arises from the philosophical program of pragmatism. Pierce celebrates a third type of inference, the **abduction** (Psillos 2011). This is different from induction – moving from the specific to the general rule – and from deduction – moving from the general rule to the specific case. Abduction is also called “retroductive inference,” or “inference to the most plausible explanation.” Abduction specifies a methodical way of inferring a hypothetical explanation which, however, requires further investigations. As such it specifies the thinking by which Sherlock Holmes solves his cases (Eco and Sebeok 1988).

- [Rule, strong Major]: *dogs do not bark at their master.*
- [Result]: *there was a theft; the dog did not bark in the night.*
- [Case; weak Minor; hypothetical explanation]: *the master must be the thief.*

Sherlock Holmes solved the case of the “curious incident in the night” as follows: the facts are “*there was a theft in the night and a dog that did not bark.*” Then comes the simultaneous intuition from rule and result: “*ah . . . hey . . . watch-dogs*

do not bark at their masters [rule, strong major], as there was no barking at night [result], the thief must be the master [case, potential explanation]. Let us confront the master; if he confesses, we have the decisive evidence." This intuition is facilitated by switching slightly from "dogs do not bark" to "watch-dogs do not bark." Given what is known, an abduction is consistent with that evidence, but we need to exclude other persons the dog might not bark at. In rhetoric, this move of suggesting a plausible conclusion comes by the name of apagogé: an indirect proof that an explanation is well consistent with the facts by dismissing rival explanations. The facts are a start, the **hypothesis is but transitory** in the middle of the action.

Scheler (1960 [1925], 460ff), on knowledge in modern society, commented on this historical shift of meaning of "hypothesis" from a potentially real entity to a purely fictional construct. Originally, hypotheses referred to constructs which explain existing facts and predict new facts. Such ideas include "viruses" or "atoms" and "aether" or "phlogiston." The former two were confirmed by future research, the latter become obsolete. In psychology, the debate about consciousness as "hypotheses" continues; some see it in the light of the Hicks-Boson, about to be verified at CERN; others make the analogy to "phlogiston," about to be obsolete. However, a hypothesis is still hoped to refer to a real entity that one day can be pointed at, though not yet.

Under the influence of modern pragmatism, the meaning of "hypothesis" shifted to that of a **convenient model** whose only function is to guide effective action. The model of various instantiations (visual, verbal, material, statistical; Frigg 2010) is locally adjusted in response to the resistance of reality. The model assumptions are arbitrary as much as they have simplicity and lead to useful implications; e.g., the earth is flat; how far can we go? or humans are entirely rational; what is the level of inflation going to be? Any real experience that goes beyond verifiable sensations is a hypothesis, including the dark side of the Moon, which we will never see from the Earth.

This leads Max Scheler to distinguish ironically between the idealist, the pragmatic, and the

"wise." The idealists are fixated on the "true reality" against appearances; they thus tend to ignore or dismiss the resistance of the world. The pragmatists are lost and disoriented in random worlds and busying themselves with fixing locally operative models; for them the world is a local construction that is temporarily useful. For the "wise" (i.e., phenomenologists like Scheler confessed to be), who sense the need for firmer orientation in a random world and for whom pragmatism is too short term, both the images and the world are eminently real and neither is to be taken lightly, and the moon really has a dark side.

Hypothesis in Psychological Science: The Once "New Look"

Psychology classically deals with thinking and subjective experience related to social interaction and the body; cognition is dually embodied, socially situated, and organically incarnated. When Brentano clarified the trichotomy of minding into intentional acts of representation, judgment, and feeling [cognition, evaluation, conation], a hypothesis seems to fall into the limbo between representation, the intentional minding of an object, and a judgment about its existence; a **hypothesis remains suspended** without any conviction whether the object exists or not. In addition, we might feel attracted or repelled by this object (Brentano 2015 [1874], p. 295). The unicorn comes to mind, it is intentionally inexistent, but widely liked.

Behaviorists dismissed all this as drivel and focused their research dogmatically on how habits form from effects. Classically, an innate response of salivation in the sight of food gets associated to the sound of a bell; henceforth, the dog salivates when the bells ring. In the operant mode, any behavior, however superstitious, can become frequent if reinforced; thus, behavior becomes fit for circus performances, and social media.

Neo-Behaviorism, imitating the physical sciences, postulated hypothetical constructs for learning theories; it was argued that hungry animals form "expectations" and "cognitive maps" of where to find food. To these laws of effect,

Gestalt psychologist juxtaposed the spontaneous learning by insights. Human and other animals do not always follow a random path of trial-and-error littered with reinforcements. Much learning occurs in sudden bursts of “insight.” After some trying without progress and calm examination of the situation, Samson the chimp suddenly grabs the stick and steps on the table to reach the banana dangling from the ceiling. Stick and table, lying about, suddenly acquired functional value for his problem: a banana out of reach. Samson displayed mentality and spontaneous behavior, motivated but not shaped by consequences (Koehler 1925).

What is being learned? The cognitivists’ answer includes not only habitual behavior, but **mental structures** as well: stimulus expectation, motor image, causal attribution, determining tendency, disposition, attitude, or a conditional expectancy mind-set of the kind *if-X then do A, then you will reach Y*. This mind-set is not accessible by introspective experience; it is only a hypothetical construct, a condition on the side of learners which modify the selection and processing of information (Foppa 1965, p. 186). This leads to the once “new look” on perception as a process going beyond the information given: perceptual cues are ordered into meaningful patterns, cues are recognized in the light of a schema that affords perceptual readiness (Bruner 1974, 114ff); learning becomes problem-solving.

Gregory (1980) formulates a theory of **perception as unconscious hypotheses construction**, defined as “*selections of signalled and postulated data organized to be effective in typical and some novel situations*” (ibidem, p. 184), “*fiction generators which may hit upon truth by producing symbolic structures matching physical reality*” (ibidem, p. 182). Perceptual hypotheses are coded signals with predictive power, and they can be confirmed and disconfirmed though not with certainty; percepts are tied up with language that codes signals, which depend as much on what is as on what may be the case. Compared to scientific hypotheses, perception is from a vantage point and in real time, of instances not generalizations, about concrete objects, predictive not explanatory, and aware as percept. We are conscious that we see a dog. However, the perceptual

field is full of ambiguities, distortions, and paradox features, and we recognize them as false hypotheses arising from best fit. The perceptual field is not Euclidian, in the sense that parallel lines never meet; this is only the case in the near visual field, wider afar lines converge. According to this account, perception moves from signal and data to hypothesis which periodically misfires when the physical reality diverts from the experienced one. The hypothesis is the **end point of the process of coding signals**; the percept offers the best fit.

For others, the problem becomes, how psychological dispositions (attitudes, cognitions, schema, perceptual or effective hypotheses) change across time and situations. Piaget (1972) explores an **ontogenetic development theory of schemata** which temporarily stabilize by equilibrating between phases of assimilation and accommodation. In the assimilation phase, the child is working from a temporary hypothesis as if “*X[animal] is wowow*,” thus until further notice the current schema X[cat] absorbs various acoustic cues in the expected category [cat]; this works up to a point until accommodation sets in and extends the schema to “*X[animal] is miao*,” introducing a differentiation between [cat]miao and [dog]wowow. The “as if” assimilation can be widely off the mark; it allows for playful engagement with reality when the child rides a *broom* as if it were a horse. A sinister function of assimilation arises in the willful extension of a category to a wider range of things simply because one can. A famous Chinese story tells of court officials calling the present offered to the Emperor “what a marvellous stag!,” while being a horse. Insisting on calling a horse as “horse” then becomes an expression of disloyalty in the face of power that is punishable by death. Insisting on the power of imagination can be a power game.

For Miller, Galanter and Pribram (1960), the hypothesis became the image that guides perception as well as the action. The action scheme offers structure in both directions, thus **framing perception and action**. The image guides the perception of relevant cues; the plan offers behavioral choices towards the goal. In regulating goal-directed behavior, hypothetical results are feeding

forward as goals which are continuously compared to current affairs through feedback, until the gap of “is” and “ought” closes; if it ever closes as the “ought” is part of a self that moves in co-ordination with others (Prinz 2012). Competent social activity involves the flexible matching of percepts with plans of behaviors from a stock of proven “if . . . then” observations. This allows to recognize different ways of why peoples make mistakes: category errors on X, planning errors on Y, and lack of skills, i.e., percept-motor schemata X-Y.

What for science is a tool, became for psychology the theory: **humans are intuitive statisticians**. Minds work by testing hypothesis to make causal attributions, judgments under uncertainty and risky decisions (Geigerenzer 2020). The computer as a calculating machine becomes the core metaphor of this theory. The subjective mind is benchmarked against “formal-objective calculation” and characterized by its various deficits and biases against the norm of reaching conclusions in one best way. For some, this wins a Nobel Prize in Economics (Kahneman 2011); for Geigerenzer et al. (1989), this amounts to unjustified intellectual imperialism.

Groner (1978) had earlier offered a different example of this looping modeling: a hypothetico-deductive theory about ordinary people solving problems by using heuristics (Groner et al. 1983). Cognition is modeled mathematically as **progressive hypotheses reduction** along different paths of problem-solving. This involves strategies for focusing, testing, and discarding rivals within sets of possibilities. It also deals with the storage of falsified or confirmed hypothesis in memory. The theory involves three entities: hypotheses, input information, and an evaluation criterium. For a problem task, the space of all possible hypotheses H is larger than those relevant for a person Hp. Equally, all available information I is larger than the relevant information for person Ip. Thinking is progressing across sets of Hp/Ip and reducing the number of relevant hypotheses. Different paths of problem-solving are mathematically formalized to make predictions about type of solution, response latency, and attention focus. Problem-solving is an embodied but subconscious

process for the study of which specific techniques of eye movement tracking were developed [ibidem, p. 177]. This theory postulates nine ways of hypotheses processing, thus working against the ritual of testing against only one best way (Groner 1978, p. 174).

Possibilities Beyond Hypothesis

This chimes well before its time with recent calls in psychology to limit the vacuous ritual of statistical testing and to spend more time on conceptual developments and measurement (Scheel et al. 2020). Debruwere and Rosseel (2021) go even further and suggest ditching the hypothetico-deductive method altogether, and to reduce the experimental efforts in favor of collecting more data, from more populations and across more situations. The model science is no longer astronomy or subatomic physics but meteorology and biological taxonomies where local observational data precede mathematical modeling (see Fassnacht 2000; Bruner 1974, p. 462).

Another glance beyond hypotheses arises from the experience of hermeneutics, the science of text interpretation, which avoids altogether the monological-operational language of hypothesis testing (Gadamer 1975; 3ff). All text interpretation is guided by **prejudice** and a **cultivated attitude of openness**. This allows expectations to be frustrated and the reading to be inspiring. The need for prejudice arises from the impossibility of a prejudice-free approach; all reading starts from a lived pre-understanding, not something you put there [i.e., hypo-thesis]. The hermeneutic circle moves from a naïve start and what seems very strange reading to a second step, where the unfamiliar is assimilated and rendered familiar; only a third cycle opens to the text on its own terms as if in dialogue with another person. New understanding arises from a **fusion of horizons**, when the reader experiences the text as an enriching encounter with transformative effect. The initial prejudice can be inhibiting and reproductively confirming your prejudices; or reading a good book can inspire and turn you into a different person. The hermeneutic experience rehabilitates

tradition and authority as productive constraints (ibidem, 277ff). The interpretive enthusiasm must chisel away at the canon of tradition and the dogmas of authority in order to avoid the madness that arise when working without constraints and under the guidance of “anything goes.”

While hypothesis testing is a monological strategy seeking ego-centrally effective interventions in the world through control and predictions, hermeneutic efforts are oriented dialogically towards reaching a common understanding among people who engage the world as if it were a text that speaks (Habermas 1989; Blumenberg 1986).

Summary

In summary, we can say that the term “hypothesis” marks a space of possibilities in several ways. Firstly, it is the uncertain starting point from which firmer conclusions might be drawn as in public reasoning. Secondly, the hypothesis is the logical end point of a process of firming up on reality through scientific enquiry. Thirdly, hypothesis is a point of transition that calibrates perception and social interaction. And finally, hypotheses might be part of a monological ritual of reasoning that distracts from reaching a common understanding about the world and its utopian possibilities.

Cross-References

- Abduction
- Dialectics
- Possible in logic
- Utopia

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Ideology

Kevin R. Carriere
Washington & Jefferson College, Washington,
PA, USA

Abstract

Ideology is a term frequently used though rarely defined, having its historical use traced to the late eighteenth century. While used as a synonym for political beliefs, ideology exemplifies deeply engrained scripts for how one chooses to interpret the world. While most research has focused primarily on the content of ideology (what value a conservative might hold, what traits define a liberal), there has been a recent call to explore the doctrinal and relational components of ideology instead. In this way, research can better understand not just what ideology is, but how ideology maintains and permeates itself across individuals and groups. The existence of ideologies requires the consideration of utopias yet to come. Future research gives us the opportunity to study ideologies and utopias by examining revolutions in the toppling of governments, in the changing of workplace norms, and in the individual who resists conforming to existing ideological beliefs. Reflections on the possibilities of how future research in this field can be developed are suggested.

Keywords

Ideology · Utopia · Possible ideologies ·
Revolutions · Doctrinal · Relational

Introduction

The possible interpretations of what ideology “is” are vast and nebulous. It has been called “one of the most ubiquitous concepts in modern political thought” (Mullins 1972, p. 498). The concept has found a similar fate in psychological research, rarely being defined yet functioning as a critical concept in political psychology, which frequently interprets it as synonymous with political beliefs. Yet, ideology is much more than being liberal or conservative. Its expansive possible definitions permit a more nuanced understanding of not just the content of the belief systems, but also the structural, historical, and meaning-laden construction of such belief systems. This entry will start by defining ideology and examining how it has developed over time.

History of Ideology

The history of ideology traces itself back to 1796, when Destutt de Tracy used the term as meaning a “science of ideas” (Kennedy 1979; Lichtheim 1965). Napoleon, and later Marx, took the term as a pejorative descriptor against his opponents as

ideologues (Drucker 1972). In sociology, Karl Mannheim built his understanding of ideology into two categories – of the partial, and of the total (1938)¹. In partial ideologies, disagreements can exist, but there still exists a shared intersubjective worldview between speaker and listener, such that both parties can agree on what is a lie, and what is the understanding of truth. If false beliefs or statements occur within a partial ideology, this is attributable to the human nature of individuals, not any maleficence by the individual. We live our lives in partial ideologies – it is our way of understanding the world.

On the other hand, total ideologies describe situations when thought systems are so divergent that the fundamental ways whereby two individuals experience and understand a particular event can be totally incompatible with each other (Mannheim 1938). In this way, a “total ideology” would not include models of thinking such as scientific thought, which require the shared goal of seeking truth and having a common language under which to communicate. Instead, total ideology includes both the formal and informal systems that maintain the status quo and direct our understanding of the world toward certain trajectories and away from others. Western interpretations of the world are influenced in large part by a capitalistic, patriarchal, and white supremacist mindset. Any challenges to such a system are fundamentally rejected and considered incompatible, improper, and potentially even misleading. The fury currently erupting in the United States over “critical race theory” and its attempted bans within public school systems is one example of how total ideologies continue to stake their power in the individual’s everyday experiences. Other researchers have expanded this view of total ideology as a false consciousness – the willingness to support a worldview that one incorrectly believes benefits themselves (Eyerman 1981; Jost et al. 2014). Marx’s belief in the downfall of capitalism was not realized because, according to Eyerman (1981), the people had bought into the false

consciousness of capitalism, believing they (and their children) would someday reap the rewards of the system.

Mannheim placed ideology in contrast with utopias (Mannheim, 1938). Ideologies are worldviews that maintain the status quo, while utopias are possible futures that work to overthrow the current system (Kashima and Fernando 2020). If such a utopian revolution were to succeed in overthrowing the current ideological creation, it would result in such utopias becoming the next ideology, waiting for their turn to be overthrown. Utopias are not-yet-realized ideologies, where the determining factor of what becomes an ideology and what remains a utopia is strictly determined by the society on which is currently being used by the majority in-the-moment. While ideologies are oriented to the past and as society *is*, utopias are oriented toward the future of as society *could be*. This cycle of constant ideological revolution has been discussed in terms of rights and duties (Moghaddam 2004) and forces us to consider the historical context of ideologies, which at one point were more than likely a utopian idea at one point in time, awaiting their moment to emerge as an ideological foundation.

Mannheim’s view of total ideology as a form of maintaining the status-quo fits into the mainstream psychological perspective of ideologies as a method of system justification (Jost 2006; Jost et al. 2014). Ideology is not simply the dominant mode of thought (“capitalism”) but its active participation in ensuring that the (“capitalistic”) mindset survives and thrives in each future moment (Augoustinos 1999). For example, in a series of studies, Jost et al. (2014) show how part of the function of religion is to provide justification for the existing social order to establish not only legitimacy, but also to establish that religion is worth preserving for future generations.

Sampson (1981) noted that within psychology, ideology had been developing in two different ways. First, it is used as a term of false consciousness, where the ruling class’s material interests are hidden through ideology to keep the status quo intact. And at the same time, it also was being used to “accurately represents the consciousness of a group or an epoch” (p. 731). In considering

¹For a review of Mannheim’s work on ideology, see Hammersley 2021.

how ideology could both represent falseness and truth, Sampson argued it is true in how the subject experiences it, yet what the subject is experiencing, i.e., the object of experience, can be false in so far as it maintains a systemic inequality between two groups of individuals. To study just the individual leaves one blind to the systemic barriers and limitations maintained by the status quo, yet to study solely the status quo ignores the individual who engages, participates, and contributes to the maintenance and upheaval of a given ideology. Researchers need to consider how the individual contributes and engages with the various meaning systems around them, providing the opportunity to consider an individual who both accepts and rejects the current ideology at any given moment. In a study examining how young children negotiate gender relations, equality, and feminism, Rogers (2020) provides an example of the equivocation of ideology in a second grade girl discussing the importance of being a girl while recognizing the burdens of the current ideology to keep her behavior in line with the status quo:

She explained that being a girl is important to her because ‘we get to pick girl stuff. . . That we could take what we want. But, not the stuff for boys.’ When asked what she does not like about being a girl, this second-grader said: ‘That we don’t get to pick the stuff that we really want. You’ve got to pick girl stuff instead of what you want’. (p. 187)

Yet, this engagement with the meaning-systems surrounding ideology has frequently led to latching onto specific political meaning systems. As time passed, the definitions of ideology and “ideological beliefs” became intertwined, as “being ideological” was tied with being politically sophisticated or knowledgeable in politics. Political scientists have consistently drawn from the definition of ideology as a stable and coherent belief system (Converse 1964), while others used this definition to argue that the average person cannot be “ideological,” since their positions on a range of topics are so ill-informed, shallow, and random (McGuire 1986). Psychology has done little better, defining it as a collective belief system that gives meaning to *political* behavior by organizing one’s values (Jost 2006). The

interchangeability of “ideological beliefs” and “political beliefs/behavior/thought” has led research to fail to consider the everyday life of (in)formal belief systems outside of the political realm (Augoustinos 1999).

The large majority of the research into ideologies has frequently been in conjunction with political belief systems. However, nonpolitical research does exist, and has expanded ideology to frame issues of neoliberalism (Bettache and Chiu 2019), feminism (Rogers 2020), white supremacy (Nogueira 2013), religion (Jost et al. 2014), color-evasive racism (Annamma et al. 2017), and ethicality (Galvin and Herzog Jr. 1992). This is not to dismiss any of the above as nonpolitical. Many of these issues may have their own political angles in discussions around freedom of religion, of group dominance, and of the rights of minorities, to name a few. Yet, these ideologies remain qualitatively distinct from pure behavioral and attitudinal differences of individuals on different portions of the political spectrum.

Ideology As Master Narratives

The term “political” often refers to the negotiation of self with others and otherness (c.f. such use in political imagination, Glăveanu and de Saint Laurent 2015). Yet, ideology does not need to operate in negotiation of others and otherness. Some ideologies – such as *The American Dream* – operate based on the individual and their interaction with their own future possible selves, external to the interactions of others. Instead of positioning toward others, ideologies can very easily position individuals in terms of how they make sense of the world around them. Ideological thinking may be considered as a type of master narrative (McLean and Syed 2015), deeply engrained scripts for how one chooses to interpret the world, with what positions, and what histories are brought forward and what futures are held back.

Master narratives are created by groups, for groups, and molded and used by individuals within these groups. Ideologies as master

narratives shape who we are and how we interact with those outside of our own ideologically defined spheres. And yet they have implications for how we teach historical truths (Carretero 2018), how we remember past events, and how we imagine the future (Obradović 2018). In an analysis of high school textbooks, Alridge (2006) examined how the master narrative of Martin Luther King Jr. sought to promote only certain portions of his life, choosing to ignore the more complex and complicated sides of his history. Other researchers have continued to explore ideology as a master narrative, examining how master and alternative narratives of gender can influence how children either disrupt or support gender inequality (Rogers 2020).

Master narratives also provide the opportunity to consider not simply the formal belief system of *capitalism*, *conservativism*, or *the patriarchy*, but also the informal systems that help maintain such formal systems. Menstrual products are taxed in the United States, as if they were an optional, nonnecessity, in comparison to the non-tax status of most food. But informal systems are not always so explicit – the “old boys club” of various industries; the disparities in pay based on race, class, or gender; the existence of unpaid internships and the affordability of being able to live without an income. All are informal systems that seek to maintain the status quo and support the formal system that exists in society. They echo parts of the master narrative that remain unquestioned, assumed, and non-challenged as “the way things are.” The informal systems within an ideology can be better understood within the larger socio-ideological context.

In her study of children’s beliefs about gender equity, Rogers (2020) noted four approaches to engaging with the ideology of gender roles. Two, “genderblind” and “differences,” existed to promote the master narrative of inequality, and the other two, “incongruent” and “counternarrative,” functioned to promote the utopia of equity between genders. Children who spoke through a differences-based narrative, where they talked about the differences between girls and boys, and felt that their friendships and interests would change if they were a different gender. They were

more dogmatic in their understanding of gender differences, and any claims to challenge the system (a girl saying, “Pink is better than blue!”) does nothing to dismantle the system of inequality and access to a wider range of colors. Compare this master narrative with those who engaged in a *counternarrative* discussion. These children actively noted the relational issues around gender inequality and stated that their goal was to prove it wrong. If they were to discuss the system of colors, individuals who used a counternarrative framework may say things like “I will wear whatever colors I like, and you should too.”

The Master Narrative of the American Dream

The narrative of the American Dream is a key component of a North American identity holding a large amount of power over how one considers future job opportunities, illusory hopes for unobtainable futures, and even how we take care of our elderly population. This belief that anyone can be successful and move up in economic class rankings through hard work and determination, and that future generations will be better off than your own can lead to critical meaning-making outcomes. Those who were led to believe it was easy to move upward in socioeconomic status were more willing to endorse income inequality than those who were lead to believe it was very unlikely to move up in socioeconomic status (Shariff et al. 2016). This effect was also shown at the macro-level, where countries that had higher socioeconomic mobility were more likely to also support income inequality.

Ideologies such as “the American Dream” can lead to political considerations such as believing one will eventually “make it rich” and therefore, reduce one’s incentive to want to tax the rich. The marketing and propaganda generated around “The Death Tax,” (the repeal of the estate tax in the United States that effected just a tiny minority of individuals) led to wide support from a range of individuals, many who would never benefit from its repeal. These ideologies can also direct the individual to consider their futures in overly

optimistic ways, where both noncitizens and naturalized citizens are more likely to believe they will achieve the “American Dream” than citizens (Cohen-Marks and Stout 2011).

The functioning of the ideological content of *The American Dream* is one that on its formal level promotes hard work, independence, and self-reliance. Yet, informally, within such an ideological narrative is one of community exclusion, of low worker support, and of minimal acknowledgment to the differential positions of power of each individual person within the society. Yet, even though such a dream is difficult, and even impossible for some individuals within certain neighborhoods and socioeconomic statuses (Chetty et al. 2018), the American Dream remains a stable master narrative in the American mind across generations (*Opening Doors to Opportunity: Generation Z and Millennials Speak*, 2020). The process of survival and maintenance of the master narrative of an ideology is just as important to understand.

Beyond Ideological Content to Ideological Structures

A large portion of psychological research focuses on ideology as political identification and beliefs. In an effort to sidestep this problematic approach to ideology, this entry proposed a definition that goes beyond any specific content of a belief and focuses on the overarching structure of what makes up an ideology— that of collective stories. Yet, regardless of either approaching ideology as a political system of thinking or a master narrative of storytelling, both of these definitions may lead researchers to consider “what” the story is, or “what” the ideological differences are, and not necessarily any large exploration and understanding of how the individual *engages* with such stories. In the next section, this entry outlines work that seeks to expand the study of ideology from a content entity to one of structure.

In reviewing the state of ideological research, Zmigrod (2020) suggests that psychology has long examined the content of ideological beliefs (do you hold democratic or conservative values)

and should instead examine the process of how ideological thinking comes to be. Zmigrod (2020) identifies two main characteristics of ideology: doctrinal and relational. Ideology is rigid to its doctrine and averse to new evidence. Second, Ideology is also relational – it is oriented toward providing preferential treatment based on group membership. This *doctrinal* and *relational* approach to examining ideologies provides researchers with the ability to move beyond the content of the ideology (i.e., is it a system of thinking based on political power) toward new possibilities. In doing so, one can examine the range of ideological thinking by exploring the rigidity and identity salience of the individual as they interact with an investigated ideology. Instead of considering how one’s political beliefs predict support for a given issue, more attention can then be given to how strongly they identify with their political beliefs (Espinosa et al. 2018) and how deviants might be treated who may not hold such strong beliefs (Allamong and Peterson 2020).

Ideology As Doctrinal

The doctrinal aspect of ideology has also been examined under the term *ideological strength* (van Prooijen and Krouwel 2017). The benefit of using such a concept of ideological strength is that it allows ideology to vary on its salience. For example, while a content-focused ideological view would consider conservative ideology as a cognitive driver on an individual’s decision making at each moment (Jost et al. 2003), the doctrinal-focused ideology provides an understanding of how such ideological thinking can change, based on an identity that is currently prevalent within the individual’s mind (Fischer et al. 2010). It also provides a more holistic understanding of the range of ideological thinking by considering not just ideological member affiliation, but how strongly one identifies with ideology X as it relates to their momentary decision making.

By examining ideology’s rigidity, we can examine the evolution of ideologies over time. If an ideology is more rigid in accepting new ideas and change, it may further double-down in their

beliefs when challenged, leading to more extremist tendencies. The transformation of the Republican ideology in the United States is a prime example, where the requirement to support the “Big Lie” in the outcome of the 2020 election has led to the ousting of its own leaders. On the other hand, ideological rigidity necessitates the examination of the ductility of an ideology by examining the contexts and criteria necessary for the breaking point of one ideology into many. The ideological goals of revolutions frequently lead to group fractures – the Mensheviks and Bolsheviks of the Russian Revolution, the Jacobins and Girondins of the French Revolution. In both, the rigidity of a new ideology breaks, spawning new ideological goals and imagined futures. Under what conditions the rigidity of ideology fails to unite its members needs further psychological explanations.

Psychology can assist in this endeavor by examining the micro, individual-level experience of ideology. The existence of places such as Christiania in Copenhagen as an anarchistic commune shows that in small pockets of the world, the ideological presence of capitalism has been overturned. The negotiations with its members, its community, local police, and local laws that ensure the future existence of Christiania and similar communes are rich psychological arenas. The Danish government required the residents of Christiania purchase its own land; an action which itself stands in stark contrast to the ideal of non-ownership, yet is required for their ideology to continue its existence.

Ideology As Relational

The benefit of the relational component is in the directionality of ideology. Ideological thinking is not a stagnant function. It engages with someone or something for some purpose, be it system justification, power manipulation, or self-preservation. This relational component of psychological processes has been explored in a variety of other areas, including collective action, legitimacy, and general issues of discrimination and prejudice. For example, van Zomeren (2015) considered how collective action is a way to regulate social relationships with others. In

considering the relational component of ideology, research considers not simply how the individual negotiates with the macro-level (in making one’s utopia their ideology), but also how they might engage with others within the system. The relational component of ideology allows for an understanding of how various symbols and signs, such as a Make America Great Again hat or a bumper sticker on a car, can identify people with the stories they both carry, and, perhaps more importantly those they do not.

Research into a more content-driven understanding of ideology still can be done, but requires a consideration to how the individual weaves their own personal story onto how they interpret and understand the ideology in that given moment. Instead of asking, “On a scale of extremely liberal to extremely conservative, where do you fall?”, one can ask “What does being extremely (liberal/conservative) mean to you?”. This allows a larger perspective on understanding the individual differences within an ideological framework. Since research itself cannot center on a single definition of ideology, it is hypocritical to expect individuals to be able to accurately place themselves on an ideological spectrum. This allows for a deeper understanding of the various shades of a given ideology, if only research were to explore the possibilities within ideological diverse groups.

Possible Ideologies

The intersection of ideology and possibility is rooted in a contrast between ideology and utopias, and their cyclical nature leaves the existence of possible ideologies as utopian. For a greater psychological understanding of what ideologies are, this entry considered going beyond political modes of thought toward master narratives that guide both how we recall the past and how we imagine the future. In doing so, it noted the importance of considering both the doctrinal (how rigid is this narrative) and relational (how does this narrative create differences between groups) components of ideology. In this section, we return to consider utopias – possible ideologies that are not

fully realized by the majority – as a way to further research the psychology of ideologies.

Utopias are pushing to make change to the current master narrative, trying to write the next page of history in their own way. They are future-facing revolutions of the status quo, striving to overturn the current ideological system. A fully realized utopian revolution would result in what Moghaddam calls a fourth-order revolution (Moghaddam et al. 2020). This type of revolution includes a change in leadership, mass-mobilization, and changes in both the formal and informal systems to properly achieve the goals of the revolution. While examples are difficult to find at the macro-level, such utopian victories can be examined through exploration of unionization campaigns in a workplace. Such campaigns involve a change in leadership (the workers get control of their terms of employment), mass mobilization (for voting, striking, and collective action), the formal system (creating and changing the terms of employment), and the informal system (clarity of workplace expectations).

This could be why utopian ways of thinking are negatively correlated with system justification motivation and more supportive of changes to the current society (Kashima and Fernando 2020). Utopias are the lived experience of the individual, regulating the hegemonic systems that pervade and guide our thoughts and behaviors. New ideologies where utopias emerge in response to a collective discontent within a given political order center on issues around power dynamics, of rights and duties, or of distrust in the current state of affairs (Moghaddam 2004; Moghaddam et al. 2020). Revolutions in one's way of life, in one's workplace, in one's country, all present ways under which we can explore the shifting of ideology to a new utopia and subsequently new ideologies.

Conclusion

Ideology is a term frequently used but rarely defined. Its historical use as substitute for political positioning and knowledge has distracted research from a larger conversation around its

presence as a master-narrative. Ideologies, considered in the framework of master narratives, are deeply engrained scripts that act as ways for how one chooses to interpret their world through their positions and what histories are brought forward and what futures are held back. While most research has focused primarily on the content of ideology, there has been a recent call to explore its doctrinal and relational components instead. The existence of ideology requires the consideration of utopias, of ideologies yet to come. Future research has the opportunity to study ideologies and utopias by examining revolutions – not just at the macro-level in the toppling of governments, but at the individual level resisting gender norms, or at the meso-level of a revolution at work.

Cross-References

- “As If” Thinking
- Dystopia
- Feminisms
- Political imagination
- Possible in Sociology
- Real utopias
- Utopia

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Ignorance

Selene Arfini
University of Pavia, Pavia, Italy

*Oh, happy he, who still renews
The hope from Error's deeps to rise forever!
That which one does not know, one needs to use,
And what one knows, one uses never.
Johann Wolfgang von Goethe,
Faust, Dover Thrift Editions (2018), Trad. by B. Taylor; p. 32*

*At the simplest level, only people
who know they do not know everything
will be curious enough to find things out.
Virginia Postrel,
The Future and Its Enemies, Touchstone Edition (1999), p. 88.*

Abstract

Ignorance is an inherently broad and comprehensive notion, which, ironically, can refer to both the worst enemy of science and knowledge-related efforts and, in its Socratic form, their best ally. Indeed, by understanding the concept of ignorance, one can discuss a variety of topics, such as error, falsity, and prejudice but also surprise, wonder, and creativity. Unsurprisingly, so, the current research about ignorance is varied and interconnected. Thus, this chapter will be divided into two main sections: the first will be dedicated to a brief presentation of the different research areas that shape current ignorance studies; in the second section, a few questions will be asked: What can we do about our ignorance? How can ignorance be exploited and become useful? How can ignorance define the limits of our possibilities? Even if the answers presented in this chapter will not provide an exhaustive picture

of how ignorance interacts with human chances, they will hopefully offer suggestions for further steps in its analysis and investigation.

Keywords

Ignorance · Epistemology · Philosophy · Cognition · Knowledge · Reasoning · Psychology · Limits · Limitation

Introduction

At first glance, ignorance is an everyday topic that needs no further introduction. Notwithstanding its intuitive meaning, from a layman's view, at least two very different approaches can be used to approach it. Like the long-known villain in a fairy tale, ignorance, if willingly cultivated and exploited, can represent an easy target of contempt and therefore be condemned without question. Conversely, ignorance can also be associated with a positive human character: humility or the Socratic virtue of knowing our limits. In this case, ignorance is something everybody should acknowledge about oneself: to know oneself to be ignorant is the first step to bettering oneself, to learning, and to overcoming partial perspectives.

Both these versions reflect certain aspects of the notion of ignorance. Indeed, in most cases, if people are willingly ignorant, they deserve blame for it. On the contrary, if people are unwillingly or unconsciously ignorant of something and they aim at improving their knowledge, their efforts should be appreciated. Of course, the world is not as black and white as this brief introduction to the topic would suggest, and intuitively we can appreciate that not all willing ignorance brings blame (the double-blind review policy is an easy example of not blameworthy willing ignorance), and not all attempts to fill the gaps of one's ignorance should be praised (the act of cheating in a game usually involves getting to know something that one should not know yet). In any case, the distinctive moral inclinations toward two different accounts of the everyday use of ignorance should prove how inherently broad and comprehensive this notion is. Indeed, this assumption is evident even without considering more morally tricky

cases in which the role of ignorance is highly relevant, as the topics of error, falsity, and prejudice but also surprise, wonder, and creativity.

Thus, even if ignorance can at first appear like a straightforward and atomic notion, it incorporates a variety of nuances, degrees, and shades that make it a convoluted idea, which, like knowledge (and knowing), can hardly fit in a one-line definition. Indeed, the current research about ignorance is intricate, varied, and interconnected (as proven by those special issues and handbooks dedicated to the topic, Arfini and Magnani 2020; Gross and McGoey 2018): for this reason, this entry will be divided into two main sections to acknowledge the variety and complexity of the literature on ignorance.

The first will be dedicated to a brief presentation of the different research areas that shape current ignorance studies (which pertain to the studies of ignorance as an abstract concept, the action of ignoring, and the categories of ignorants); the second section will be devoted to the interaction of ignorance to the idea of the possible. A few questions will be asked: What can we do about our ignorance? How can ignorance be exploited and become useful? How can ignorance define the limits of our possibilities? Since what is and what *is perceived* as possible change as much as our ability to obtain new knowledge, expertise, or competence, ignorance represents both a limit (a boundary that we cannot pass) and a limitation (a boundary that we can overcome) to our possibilities. Far from restricting the entry to a negative approach to ignorance (i.e., viewing it as something that merely restrains cognition), this last section will also present ignorance as the ground from which creativity in reason and action emerges: how to come up with new ideas and hypotheses depends on how we approach our ignorance and what we do not know yet. Moreover, ignorance can also be connected to the concept of unexpectedness and our reaction to it: something that we did not expect can trigger different epistemic and emotional responses, such as wonder and surprise but also fear and negation. Understanding the processes by which we ignore or we are ignorant of something can shed some lights also on how we approach unforeseen

possibilities. Thus, even if the answers presented in this chapter will not provide an exhaustive picture of how ignorance interacts with human chances, they will hopefully offer suggestions for further steps in its analysis and investigation.

Ignorance Studies: One Concept and Three Distinct Perspectives

Thus, ignorance is a broad term that describes a plurality of circumstances and conditions. Evidence for the broad significance of the term rests on the definitions provided in the dictionary for its related terms: to be *ignorant* and to *ignore*. Notwithstanding the common etymology (from the Latin *ignōrāre*, not to know), the two words express different perspectives from which it is possible to analyze at least two distinct conditions and typologies of ignorance (while the noun “ignorance” encompasses both meanings).

From the Oxford English Dictionary (Stevenson 2015), to be *ignorant* is defined as to be “destitute of knowledge, either in general or with respect to a particular fact or subject; *unknowing, uninformed, unlearned*” (added emphasis). Instead, to *ignore*, in the most common use, is defined as the action of “refusing to take notice of; not to recognize; to disregard intentionally, leave out of account or consideration, shut ‘one’s eyes to.’” These definitions are interestingly different because they can describe not only two different points of view on ignorance but they can also describe different types of ignorance altogether. If “to ignore” is taken as “disregarding intentionally” something, then people who ignore are bearer of different ignorance in comparison with people who are ignorant because they are unconsciously and unintentionally poorly informed. To be precise, this second category of people do not ignore something, but they are ignorant of it. Using ignorance to cover both these situations drives then to merge conflicting and different cases. For this reason, the nuances in the terminology of ignorance have also determined different approaches to the theme. Briefly put, indeed, ignorance studies revolve around three main areas of interest: the logical, cognitive,

and epistemological description of ignorance; the investigation about how others' ignorance is exploited; and blurred instances of ignorance as a mix of being ignorant and ignoring.

Logical, Cognitive, and Epistemological Descriptions of Ignorance

What does it mean to be ignorant? Are there gray areas between ignorance and knowledge? The first research area encompasses the attempts at enucleating logical, cognitive, and epistemological descriptions of ignorance. These attempts reflect on the broad and encompassing concept of ignorance while focusing on particular viewpoints. Usually, for example, logical formalizations of the concept of ignorance tend to concentrate on specific instances of the term. Some logical reflections focus on ignorance as an action that the agent performs (S ignores P) or an epistemic state (S is ignorant of P) that defines the agent in comparison with others (Carrara et al. 2019; Van Der Hoek and Lomuscio 2004; Gargov 1999). Also second-degree ignorance (S is ignorant that S is ignorant of P) is encompassed in this typology of studies.

Epistemological examinations of the term in this field brought on a now well-known divide in the literature: the separation between the standard view – which sees ignorance as the absence or lack of knowledge – and the new view, which describes ignorance as the absence or lack of true beliefs. The difference between knowledge and true belief is a matter of philosophical nuances. Knowledge is commonly associated with *true and justified belief*. A true and justified belief is, for example, my belief that I have a computer: I do in fact have a computer, and I have good justification for believing so because I am using it to type. If one refers only to true belief, one refers both to *true and justified beliefs* and *not justified* ones: if a tarot reader tells me that I'm infected by measles because her tarots tell her so, her belief can be true without being scientifically justified. So, the standard view assumes that ignorance is the opposite of knowledge and that ignorance and knowledge exclude each other (Haack 2001; Le Morvan 2011; Zimmerman 2008). Instead, the new view on ignorance sees

ignorance as contrary to true belief: you are ignorant only if you do not have a true belief about something (e.g., in the case above, if I was infected by measles, my tarot reader would not be ignorant of that). Authors who argue for this thesis deem that none of the cases of true beliefs that fall short of knowledge are cases of ignorance (Guerrero 2007; Peels 2011). From this perspective, the label of ignorance is attributed to fewer situations and merges cases of factive, procedural, and objectual knowledge in propositional knowledge. Although these definitions bring understanding about the nature of ignorance, they remain within the boundaries of an internalistic view of both ignorance and knowledge, and they disregard cases in which ignorance and knowledge merge (as in misunderstandings, misconceptions, and disinformation).

In response to these problematic limits, some authors attempted to find descriptions of ignorance that encompass an externalist perspective and merging conditions of ignorance and knowledge (in particular, Arfini 2019a, b; Werner 2019 see also ► [“Extended Mind”](#)). In brief, these studies analyzed “ignorance” as a cognitive condition that variously affects the metacognitive, inferential, and social abilities of the agent. While this view has the merit of encompassing a broader range of instantiations of ignorance, it brings out also a weaker definition of it, since it does not depend on a strong concept of knowledge, belief, or even truth.

While these last perspectives provide food for thoughts regarding ignorance as “being ignorant of,” they do not explicitly regard cases in which ignorance as “ignoring” or “favoring others to ignore something” is considered (excluding the logical reflection). Another type of analysis arose in the last decades to consider these cases.

The Exploitation of Ignorance

Do prejudice and privilege bring forth forms of ignorance? Are not racism, sexism, ageism, and other forms of bias and discrimination entangled with ignorance? Is not a socially partial perspective an inherently ignorant one? These questions have been analyzed and posed by a second broad area of ignorance studies, which incorporates the

sociological, anthropological, moral, and cultural analysis of instances of ignorance as a result of contextual settings and manipulations.

Indeed, ignorance, seen as a pair of conceptual and multipurpose blinkers, brings out four main keywords, which designated the research in these areas: “situated knowledge” (Haraway 1988; Stoetzler and Yuval-Davis 2002), “epistemologies of ignorance” (Sullivan and Tuana 2007; Tuana 2004), “agnotology” (Pinto 2015; Proctor and Schiebinger 2008), and “strategic ignorance” (Gross and McGoey 2018; McGoey 2019). The first one emerged in feminist literature when Donna Haraway (1988) denounced the partiality of academic and scientific community’s view by approaching the flaws of the concept of “objectivity.” Haraway concentrated her attention on that term because while in theory it referred to an absolute, impersonal, and disembodied scientific perspective, it was actually incorporating and justifying a partial point of view, which embedded the viewpoint of the rich white men whose vision of science was embed in a colonialist, capitalist, militaristic, and supremacist mindset. Unveiling the partiality and hypocrisy of this point of view, Haraway began to approach a topic that now permeates some currents of the studies of ignorance, the “epistemologies of ignorance,” that now aim at finding out partiality and biased construct in scientific research and in the aims of scientific progress.

The authors that follow the research program of agnotology, instead, concentrate on broader settings: they define ignorance as the outcome of social and cultural environments, in which some strategic behaviors limit the knowledge, understanding, and epistemic grasp of parts of populations (Proctor and Schiebinger (2008); Gross and McGoey (2018); McGoey (2019)). A way to explain the reach and range of agnotology investigations is to appeal to the words of one of the authors who coined this word (Proctor and Schiebinger 2008, p. 15): “Why don’t we know what we don’t know?” to which in many cases the answer is ‘because steps have been taken to keep us in the dark!’”

As this area of research grows, it has advanced the understanding of how ignorance *circulates*, or

it is *produced* in order to be *distributed*, in populations that share the same culture, same values, and same epistemic or normative principles. In this circulation, obviously, ignorance cannot be easily represented just as the opposite of knowledge or as lack or absence of true beliefs: it also incorporates parts of understanding, knowledge, and information, as well as the active act of ignoring. To comprehend how ignorance can assume these hybrid forms, another miscellaneous area of inquiry has beginning to appear in the current philosophical and psychological literature.

Misconceptions, Misunderstanding, and Other Blurred Instances of Ignorance

Besides the first two areas of research, another type of investigation has been flourishing in the last decade: the philosophical and psychological study of particular occurrences of ignorance. The point of interest in this multifaceted research field is “how” and “with which consequences” one can be in part ignorant of something and in part actively ignoring it.

For example, a line of study investigate how we can distinguish rational and irrational willing ignorance, and, in turn, the latter can be described as motivated or unmotivated (Caplan 2001; Somin 2015; Williams 2019). We can be rationally and willingly ignorant, for example, when the costs of acquiring knowledge outweigh the benefits of possessing it. In other cases, being willingly ignorant can derive from typically considered irrational conditions, such as self-deception, akrasia, and wishful thinking (Bortolotti and Cox 2005; Chang and Bridewell 1998). Philosophical as well as psychological studies about these conditions aims at establishing how much the agent could and should change her epistemic status.

On the same line of investigation, we have studies regarding errors of reasoning, fallacies, biases, and heuristics (cf. Gigerenzer and Goldstein (1996); Tindale (2005); Woods (2013); see also ► “Abduction,” ► “Heuristics”). All these phenomena share the common feature of being both ignorance-based – we err, or trust a fallacious reasoning because we lack some cognitive resources, such as pieces of information,

computational power or time to get more data, and ignorance preserving – once we perform the reasoning, we cannot be sure of our errors or if our hypotheses were correct unless we analyze and perform them again. These studies brought about some interesting questions regarding superstition (Bertolotti 2015), misconceptions (Dellantonio and Pastore 2020), misinformation (Bessi et al. 2014), and fake news (Spohr 2017), which are important topics also in sociology and epistemology.

Moreover, some studies look closely at the relation between the agent system of beliefs and metacognitive capacities and her ability to assess her own competence. The experimental investigation conducted by Kruger and Dunning (1999) led to one of the most known effects or biases that affects our self-assessment capacity: the Dunning-Kruger effect, which links the lack of skills that subjects have in particular areas of expertise with their high level of confidence in the same areas. On a similar note, in philosophy a collection of recent studies discuss the cognitive bubbles that affect our capacity of self-assessment or the problematic relationship between the agent's belief system and her capacity to assess its coherence and credibility. Below is a brief list of few bubbles currently considered and analyzed:

- The “epistemic bubble,” which describes the situation in which we believe we know something even if we do not know it (Woods 2013)
- The “ignorance bubble,” which describes our tendency to underestimate our ignorance and to overestimate our knowledge-gathering efforts (Arfini and Bertolotti 2019)
- The “moral bubble,” which investigates our inability to justify others' violent moral actions while we do justify our own (Magnani 2011)
- The “religious bubble,” which describes how the typical cognitive praxis of religious beliefs involves their enactment in certain social situations, for instance, moral, spiritual, and rhetorical, but they are deactivated when other kinds of decision or expectations are at stake (e.g., practical expectations, administering one's resources, and so on) (Bertolotti 2015).

All these effects and phenomena deal with the tension between the parts of our ignorance that we can understand and the part that lies beyond our comprehension.

Given the variety of ignorance studies, many are also the ways to discuss what possibilities our ignorance grants us. In the next section, some of those possibilities will be presented, referring to the distinction between ignorance as a limit and ignorance as a limitation of human cognition.

How to Avoid Ignoring Ignorance

To get a useful perspective on the possibilities that ignorance studies bring out, ignorance can be approached as two closely related but distinct categories: the limits and the limitations of human cognition. By focusing on how instances of ignorance belong to either one of the two categories, a few questions will be asked: What can we do about our ignorance? How can ignorance be exploited and become useful? How can ignorance define the limits of our possibilities?

Ignorance as a Human Limit and Chance

A limit is generally described as a point or level beyond which something does not or may not extend or pass: a physical or mental restriction which cannot be overcome (Stevenson 2015). Considering this definition, ignorance can be a limit in more than one sense of the word: in a way, there are things that we cannot know and understand for our physical and mental abilities. We cannot know what it feels like to have a functioning tail nor how it is to have a hive mind: we can describe these situations by referring to our comprehension of the physical structure and behavior of other species, but we know that our hypotheses and theories are limited by our fixed embodied perception. So, ignorance with respect to certain experiences can be understood as an insuperable limit, which cannot be overcome no matter the will and efforts to pass it. Ignorance as a limit of this kind can affect both us as a species and us as individuals: some of the reflections on “situated knowledge” derived from the fact that, within our species, there are points of

view that we as a whole can understand, but not as individuals (Haraway 1988; Stoetzler and Yuval-Davis 2002). Sexism, racism, ageism, and so on are mindsets that represent limits in a sense, since they are impediments that affect the agent's perspective, epistemic resources, and means of understanding. How can we overcome these prejudiced points of view? What are the possibilities that the understanding of ignorance offers to partial perspectives?

These types of ignorance can, of course, be partially overcome by acknowledging, reflecting over, and being aware of these limits. Acknowledging that, physiologically and culturally, some people belong to some sociocultural categories that cannot experience life, in the broader sense of the word, in a similar way to other categories, could at least grant them the possibility of knowing more about their ignorant point of view and others' experience. Moreover, since we all have different cultural histories and different physical limitations and possibilities (which become clear if we consider the difference between the sexes), if we realize that our perspective is limited, we would need to make efforts to understand others and to acknowledge the fact that our perception cannot be a default view (Haraway 1988). To cite a concrete and classical example, the well-known case about the symptomatology of coronary diseases in men and women needs to be considered. Since testing on heart disease was for a long time conducted on male patients alone, specific women's symptoms (which are usually very different from the ones that arise in male patients) were commonly underestimated, leading to serious consequences derived from not having a way to recognizing female symptoms of heart failure (Fehr 2007; Tuana 2006). After recognizing this gap in the medical understanding of coronary diseases, heart failures in women were more easily and promptly found (Emslie 2005).

In the same category of ignorance as a limit, we can also count the problematic epistemology that regards the link between low competence and high confidence, as well as the cognitive bubbles discussed before. They represent a limit that is never actually overcome, but switch from place to place, as much as we collect new experience

and competence: the limit of our competence and self-assessment, in a way, is our epistemic horizon, which we cannot reach, but just know it is there to challenge us.

Usually, a limit defines what someone cannot do: acknowledging one's limits opens the new possibilities of doing something with this knowledge. For this reason, the studies around an externalist perspective on ignorance, the analysis on cognitive and metacognitive limitations, and the investigations conducted in the field of epistemology of ignorance can be illuminating: discussing the effects of unavoidable ignorance can grant us information about how to diffuse and delegate our expertise and knowledge in an open society. The topics in these fields refer to different disciplines, such as epistemology, philosophy of science, psychology, sociology, and political science. All things considered, the open questions are still many: How embodied cognition affects our different gender perspectives? Which default model is used and should be abandoned in scientific research? Should some processes of decision-making be delegated to particular categories of people for the insights that have in comparison with others?

In any case, if our ignorance is in a way the bare epistemic limit that, in turn, defines our possibilities to get new knowledge, in some cases, the same term can describe *limitations* of the human agents, which can be overcome, with, sometime, unexpected effects. The next subsection will discuss the possibilities that agents can obtain when they recognize and overcome ignorance as a limitation.

Ignorance-Based Limitations (and Opportunities)

A limitation of something is described as "The action of limiting or placing a limit on something, constraint, restriction; an instance of this" (Stevenson 2015). Ignorance, as a limitation for the human agent, can affect different aspects of one's cognitive abilities, rationality, and perspective. Some of these effects prevent the ignorant (or ignoring agent) from doing something; some other effects enable her to do something else.

The preventing kind of ignorance includes different negative instantiations of it. One for all is

the type that agnotology studies: ignorance as the effect of cultural interferences and strategic manipulation of data. In some analyses, ignorance is even portrayed as a product that can be sold, bought, and distributed in accordance with someone's societal or economic interest. Eloquently, to motivate the use of the term "product" in relation to ignorance in their writings, authors who refer to the agnotologist school of thought often quote an internal memo of Brown & Williamson Tobacco Company that said "Doubt is our product" in reference to their campaign on the health risks of smoking. Misinformation and miscomprehension can depend on the efforts of some motivated groups of people. In this case, ignorance is an artificial limitations that affect the decision-making and problem-solving of directly or indirectly manipulated people.

Of course, there are also instances of ignorance that depend less on others' interference and more on one's condition as a limited cognitive agent. Ignoring something is, indeed, an action so natural that does not require any effort: in order to be informed, competent, or even an expert in some fields, we need to ignore other branches of knowledge. It is for this reason that the Traditional and the New view on ignorance are so focused on ignorance as lack of knowledge or true beliefs: they are the most common and recognizable instances. Discussing which kind of epistemic state would describe instances of ignorance is particularly important when, for example, we need to give standards to scientific research and knowledge. Even considering the fallible nature of these human endeavors, we need to keep searching for epistemic standards to give us reachable goals in our research.

Lastly, there are kinds of ignorance that do not prevent the agents to do or reason about something but favor them. For example, an instance of ignorance as a limitation that can create fruitful opportunities as much as problematic implications is the one that is used in common and extraordinary heuristics and ampliative reasoning. Sometimes we do not have enough information to choose an optimal strategy or to know without doubt an information: in these cases, guessing is not a random strategy. Most of the biases and

heuristics that inform our ordinary reasoning (from the bandwagon effect to the ad hominem reasoning) are fast and frugal strategies (as Gigerenzer and Goldstein (1996) named them) to arrive at a conclusion without all the necessary data. These strategies give us opportunities to act and collect new knowledge in short time and without needing complete information. Of course, they are not infallible procedures, but using them in the right context and for the right reasons can transform a situation of inaction into a discovering one. Studies on the peculiar ways that determine our use of these kinds of reasoning give us details about this uncovering of opportunities.

Moreover, almost the same kind of ignorance as a limitation is also involved in creativity, wonder, surprise, and acts of discovery (see ► ["Wonder"](#)). Ignorance is naturally involved in creative reasoning because creating something new implies not knowing beforehand what you are going to shape (Formica 2015; Magnani (2017), see also ► ["Creative Problem-Solving,"](#) ► ["Insight"](#)). Moreover, the act of creating something is powerfully connected to uncovering new affordances, possibilities, and unexpected chances: in turn, new chances and affordances bring out new questions and new aspects of one's ignorance.

Also, unexpected events can well connect the idea of ignorance to the possible. Indeed, surprise and wonder are productive ways to respond to new and unexpected events: intuitively, these responses help the agents face their ignorance and question their actual and potential knowledge. Agents, of course, can also react through negation, indifference, or rejection to the same new or unexpected event: in those cases, their ignorance is just preserved, and they miss out on the opportunity to learn and challenge what they know.

When a discovery is made, usually, the agents have faced and exploited their ignorance in a productive sense. In particular, serendipity, above all kinds of discovery, implies the reliance on our ignorance (as a limitation) as a trampoline to know more (Arfini 2019a; Copeland (Copeland 2017) see also ► ["Serendipity"](#)). Where we find new knowledge, our ignorance, as the horizon of our limitations, moves a little farther, challenging

us to find more, to know more. This can be much appreciated by quoting a marvellous anecdote that Firestein (2012, p. 57) recalled in his book on how ignorance drives science:

The eminent physicist Enrico Fermi told his students that an experiment that successfully proves a hypothesis is a measurement; one that doesn't is a discovery. A discovery, an uncovering, of new ignorance.

In sum, ignorance, approached as a general term, can represent the best and the worst of our epistemic goals and failures. In its analysis, the connection to the idea of the possible emerges as very direct: with knowledge comes possibility, and the understanding of ignorance directly fosters knowledge regarding human limits and limitations. So, the investigation of ignorance is naturally also the study of what are the possibilities that individuals and collectives have, whether it is to acknowledge their intrinsic limits or to push them to overcome their limitations in information, understanding, and competence. In brief, only by not ignoring ignorance, we can get a firm grip to what can we do with our actual and potential knowledge.

Cross-References

- Abduction
- Creative Problem-Solving
- Extended Mind
- Heuristics
- Insight
- Serendipity
- Wonder

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Illusion in Art

Baingio Pinna

Department of Biomedical Sciences, University of Sassari, Sassari, Italy

Abstract

Visual illusions behave like unexpected phenomena useful to create and sometimes to solve theoretical and epistemological issues and problems. They allow science to go further actual reality to explore the possible. Art itself is an illusion of human mind, primarily based and living within the domain of possibilities by continuously exploring possible worlds, possible selves, possible futures and theories on the basis of possible pasts. The unique combination of illusion and Art creates something special, attractive, astonishing, shocking, emergent, and, as shown in this entry, it involves even mathematics within the domain of possible.

Illusions, generally assumed as “mismatches/disagreements” between geometrical/physical and phenomenal domains, are attractive phenomena that manifest at least two basic phenomenal attributes, useful to understand their special role in Science and Art. They are called “illusoriness” and “realness.” The illusoriness describes the naive appearance of the notion of illusion expressing unreal, ambiguous, fallacious, misleading, and deceptive properties. Not all illusions appear illusory in both Art and Science. Some of them manifest an opposite sense of realness imprinting to stimuli and artworks a clear appearance of being true as actual objects, definitely not imaginary or hallucinatory. In this entry, illusoriness and realness are demonstrated to be related to a truth/falsehood antinomy, instilling

to Art a self-referential power that triggers interesting issues and paradoxes threatening the very existence of Art and, at the same time, speeding up its evolution. These issues are proved by means of thought experiments, corroborating within Art those already demonstrated in mathematics by Gödel, Turing, and Tarski. Their theorems about consistency, completeness, decision, and truth declared general statements analogous to those phenomenally achieved in our experiments. The results indicate intriguing connections between Mathematics and Art, suggesting that they are top performances of human thinking not very different and requiring deeper combined investigations and studies. On this matter, thanks to this entry, we propose new scientific hints and directions of research within the possible and the barely explored land placed between the science of illusions and Art and between Mathematics and Art.

Keywords

Visual perception · Visual illusion · Art · Paradox

Prelude

On the one hand, visual illusions behave like unexpected phenomena useful to create and sometimes to solve theoretical and epistemological issues and problems. As such, they allow science to go further actual reality to explore the possible.

On the other hand, Art itself is an illusion of human mind, primarily based and living within the domain of possibilities by continuously exploring possible worlds, possible selves, possible futures and theories on the basis of possible pasts (Glăveanu 2018).

This combination between illusion and Art allows exploration of changes, differences, new perspectives to understand and act within the world. Creativity emerging from illusions and Art puts these perspectives in dialogue, but also in contrast and, more importantly, in reflective and self-reflective mode. This further increases creativity (Glăveanu 2014, 2015, 2017) and expands

the domain and the notion possible within Art domain. It elicits awareness of differences, possibilities and, as such, favors self-consciousness of Art itself through its visual level and meta-level of perception vis-à-vis reality and the geometrical/physical domain.

The unique combination of illusion and Art also creates special, attractive, astonishing, shocking, emergent, and, as shown in this entry, it involves even mathematics within the domain of possible.

On Illusions

What is an illusion? What is illusory and what is real? What makes an illusion illusory? What makes an illusion real? These are the starting questions of this entry to be phenomenally investigated in this section.

Illusions are generally assumed as “mismatches/disagreements” between geometrical/physical and phenomenal domains (Robinson 1972; Coren and Girgus 1978; Gregory 2009; Vicario 2011; Pinna and Reeves 2017; Shapiro and Todorović 2017). They are sometimes taken as “deviations or errors” in perceiving what is real or what is known about the physical reality (Pinna and Reeves 2017; Todorovic 2016; Shapiro and Todorović 2017).

Within these views, illusions are useful to explore the complex epistemological fabric separating the physical and the phenomenal domains of perception and, thus, to build a psychophysical bridge between them. They are often used as tools to refute or demonstrate models and theories or designed to serve as limiting conditions or as *instantiae crucis* (crucial instances) aimed at testing general theoretical statements through their phenomenal attributes. Occasionally, they have become successful instances of *experimentum crucis*, according to which, if a given model is correct/incorrect, then a specific illusion is predicted and, thus, discovered as a phenomenological and logical corroboration/refutation of the model. Therefore, the discovery of an illusion does not depend on serendipity but on a logical reasoning based on a perceptual hypothesis or

model. This approach is even more common in visual arts, as shown in the next sections.

Within the ecological perspective (Gibson 1979), illusions are “picked up” when too much or too little information is present within the optical flow. On the contrary, according to the cognitive approach, illusions arise at the algorithmic level where errors, priors, or biases in the estimation of optic flow parameters emerge (Morgan 1996; Gregory 2009).

An extreme epistemological position suggests that all perceptions are illusory, but this means that if all is an illusion, nothing is (Noë 2002; Shapiro and Todorović 2017; Rose 2018). A final ultimate rebutting assumption indicates that the very concept of illusions is not necessary aimed to understand vision (cf. Braddick 1972, 2018; Shapiro and Todorović 2017).

These traditions and persisting debates reveal that illusions attract scientists by inspiring experiments, theories, questions, diatribes. These debates extended their boundaries to further complex domains like Art, where not only its products but Art itself can be considered as an illusion. This is the further argument of this entry discussed in details in the next section.

In spite of those hard debates, within and beyond the previous positions there is a general accepted definition of visual illusions according to which what is perceived does not match/agree with the stimulus pattern. In addition, there is a remarkable true/false assignment to illusions, mostly implicit and not fully studied, although phenomenally crucial for our purposes. Illusions are often accompanied by a prominent phenomenal attribute of “illusoriness,” which can be defined as a sense of strangeness, deception, singularity, mendacity, and oddity (Pinna 2013). This attribute has been frequently forgotten by scientists or confused with the notion of illusion itself. This might be responsible for the theoretical/epistemological diatribes and debates previously described.

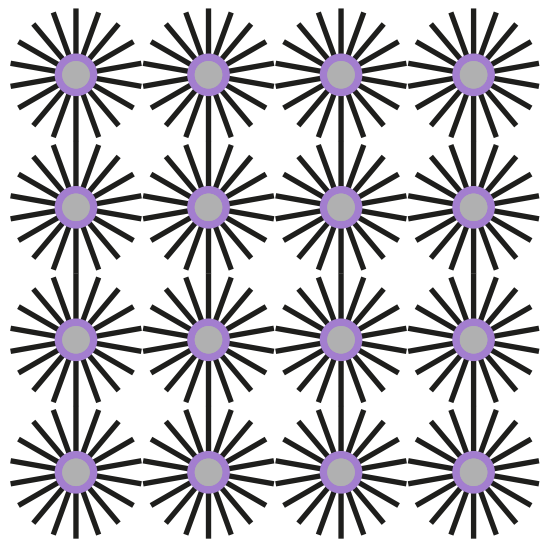
The illusoriness can be clearly seen in Fig. 1, where a flashing green inside the purple annuli is perceived while moving the gaze across each element of the radial pattern. Actually, each element of the pattern is made up of a gray disc surrounded

by a purple annulus surrounded in its turn by black radial lines. Physically, there is not any flashing green color (Pinna et al. 2004).

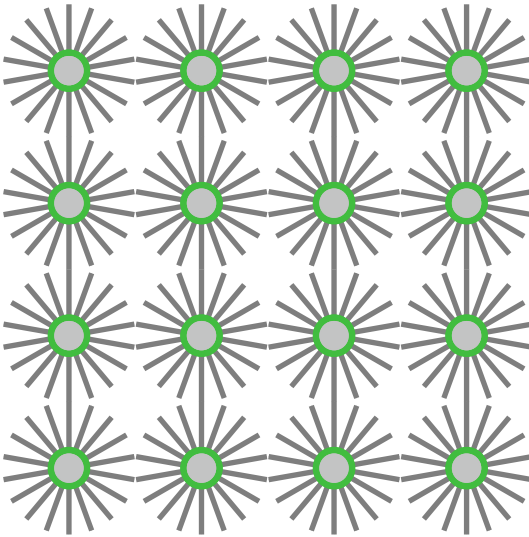
The effect emerges not instantly and mostly while jumping with the gaze from one element to another (Pinna et al. 2004). In foveal vision, the inner grays lose part of their green effect. Once perceived, the phenomenon manifests its illusoriness, that is, the outcome is promptly seen as not real and illusory. Nothing similar can be printed on paper. The illusoriness is noted before any mismatch is revealed. It comes first, before the illusion is discovered. This shows the independence of the notions of illusion and illusoriness that likely belongs to different domains: cognitive, the former, and perceptual, the latter.

In Fig. 2, flashing purple colors are seen inside the green annuli. The resulting illusoriness is viewed analogously to those of the previous figure. The illusoriness is perceived as a further perceptual attribute of the illusion, that is, the illusion appears illusory. Again, the illusion is revealed by its immediate illusoriness without any need to check potential or actual mismatches/disagreements between the physical and the phenomenal domains.

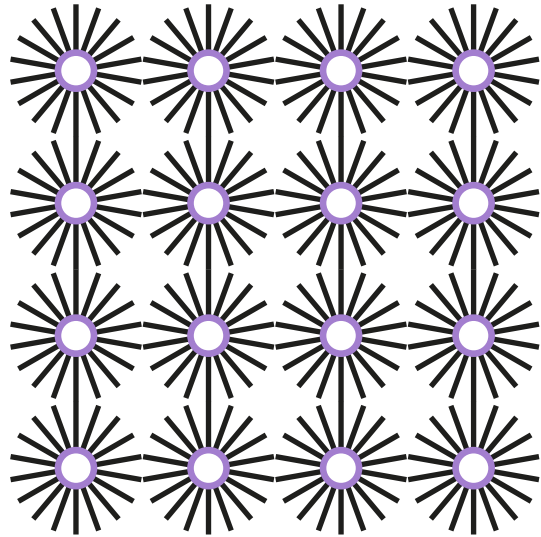
In Fig. 3, luminous brightness enhancements emanate from the inside of the purple annuli



Illusion in Art, Fig. 1 Green flashing color within the purple annuli



Illusion in Art, Fig. 2 Purple flashing color within the green annuli



Illusion in Art, Fig. 3 Whiter than white effect within each purple annulus

(Pinna et al. 2003). The white inside each annulus, physically equal to the one of the background, is seen shining and brighter than the white background, that is, whiter than white. Again, the illusoriness pops up promptly and saliently.

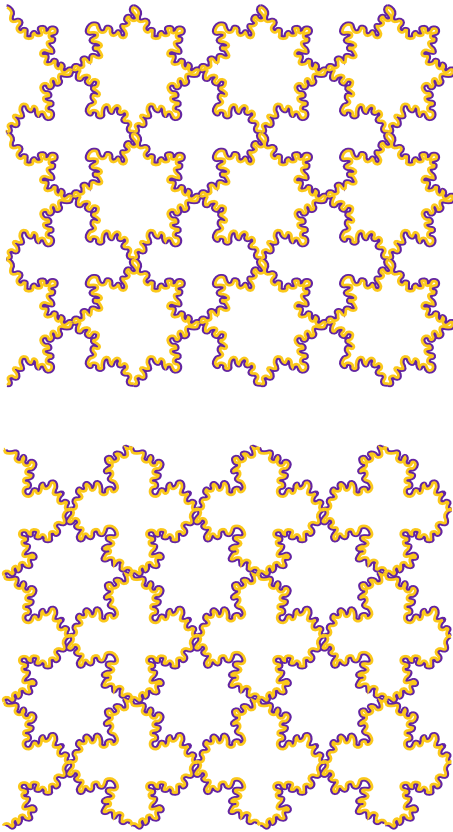
Not all illusions are illusions in the same way. Not all illusions manifest phenomenal illusoriness. On the contrary, some true illusions are accompanied by a phenomenological attribute that looks opposite to illusoriness. Therefore, they do not appear illusory but real, true even after the revelation and the discovery of the mismatch. We call this phenomenological attribute “realness,” defined as a perceptual sense of being an actual thing with a true existence, that is, definitely not imaginary or hallucinatory (see also Reeves and Dresch-Langley 2017).

It is essential for a visual system to discriminate and appropriately perceive the phenomenal attributes of illusoriness and realness, of truth and falsehood of the outside world. This improves animal adaptation to the environment and enhances the evolutionary fitness. The complex symbiotic relation between preys and predators is based, among other factors, on the ability to discern and use illusoriness and realness in favor of their survival, to deceive, to attract, to mislead, and, therefore, to be successful in male

competition, mating, predation, and avoiding predation. Truth and falsehood, related to realness and illusoriness, are crucial components of real life used in different combinations, proportions, and purposes by all species and genders, animals, and plants. As proven in the next section, they are also crucial components of Art as used by artists of all times.

Figure 4 displays one example where strong realness is perceived regardless a “true” illusion. This is the watercolor illusion (Pinna 1987; Pinna et al. 2001; Werner et al. 2007). Star in the upper half and crosses in the lower half of the pattern clearly emerge filled with a light veil of orange tint. There is not illusoriness, nothing strange or deceptive. Apparently, what is perceived is exactly what is expected to be there. Nevertheless, there are only two juxtaposed wiggly contours, one purple and one orange, with reversed positions in the upper and lower patterns. In short, the two stimuli contain the same contours with inverted purple and orange colors. The inner light orange coloration is illusory.

Together with the coloration, there is another illusion without illusoriness that goes unnoticed at a first sight. Alike the coloration, this further outcome presents realness and this is likely the reason why it passes unnoticed. It is the salient



Illusion in Art, Fig. 4 Stars and crosses watercolored by a light veil of orange tint

volumetric figurality imparted by the two contours that seems like a light shading across the boundaries. Therefore, although crosses and stars are just before our eyes, respectively, in the upper and lower pattern, they are invisible due to the deep border ownership imparted by the reversed contrast of the juxtaposed contours. The resultant effect is an apparent gradient of dark and light coloration, such as a shading going from the border with the highest contrast, the purple contour, toward the center of each figure.

It is worthwhile highlighting that absence of illusoriness and perception of realness are definitely related, although they cannot be scientifically equated as one negation of the other. The lack of illusoriness is the absence of an attribute, and, as such, it is not a perceptual fact. Therefore, it is not necessarily related to the presence of the

realness, which is a genuine perception, that is, an actual phenomenal attribute.

To sum it up, the coloration (the inner light orange filling in) and the figural (i.e., stars or crosses) phenomena taken together express a salient realness attribute and an unlikely illusoriness, which emerges at most, albeit weakly, only *a posteriori* when the true physical conditions are revealed and the presence of only two adjacent contours is ascertained.

Yet about illusion with salient realness and poor illusoriness, in Fig. 5, it is hard to discriminate that the coloration of the inner edges of the two objects are physically the same (Pinna 2006), although they are actually seen truly different. When compared with the lower object, the upper one appears faded or discolored.

The examples illustrated in this section, beyond the specific effects, put into relief the phenomenal attributes of illusoriness and realness, crucial to understand the close connection between illusion and Art.

Indeed, Art in its history played with these two attributes, sometimes creating illusions of reality or making real what is just an illusion. Things in Art are not what they truly are, what they seem to be; however, they are often conceived more real than real, namely, with a realness attribute more intense than the one shown by real things. Moreover, Art is and always remains a construct of the mind that cannot be proved to have any other existence. As such it is a true illusion with a paradoxical high degree of realness even when its content is illusory.

Given these preliminary incipits, we are now ready to get inside the second basic side of this entry.

On Art

What is Art? Is Art a perceptual “object”? Is Art an illusion? What is real and what is illusory in Art? These preliminary questions lead us inside the complex issue of illusion and Art.

The common experience of Art in educated adults is comparable to the perception of a “real object.” However, Art is a perceptual “object”



Illusion in Art, Fig. 5 The coloration of the inner edges of the two objects is physically the same, although it appears discolored in the upper one

that, much more than others, is the product of the human mind and brain and, more importantly, it is not related to any specific element or attribute of the physical domain. On this matter, Gombrich (2000) emphasized the importance of “schemata,” according to which artists represent the outside world by learning from previous artists. As such, representations are created through stereotyped figures and methods. According to Gombrich, the perception of representational art requires the use of illusion, through which the viewer recognizes the subject within a painting as the one within the real world. In other words, in history of Art, artists have developed and studied the illusions that they experienced in order to render their paintings closer to the perception of “reality.”

There are further aspects and issues, useful to fully understand the specific characteristics of Art.

To better highlight them, a comparison with color and with the previous chromatic illusions might be useful.

Colors are naively assumed as physical components of objects, according to which they are perceived colored because “they are colored.” However, objects are not truly colored (see Werner et al. 2007). Colors are the final outcomes of a long chain of complex neural processes, starting with the spectral content of light, which is the basic physical domain. Photons are, then, absorbed by three different classes of cone photoreceptors in the retina, processed in different intermediate brain stations, and sent to specialized areas in the brain. The perception of colors comes up only at a final unknown link of the neural chain. This means that colors are illusions without illusoriness but with clear physical correlates that psychophysical methods can effectively measure.

Differently from colors, Art does not have any physical equivalent but it is a pure perceptual attribute that, despite all, turns out with high degree of realness likewise colors. Since Art is one of the few visual objects without a physical domain, immediate questions are: Is Art an emergent attribute? From what and from where does Art emerge?

In history of Art, some visual attributes conveyed and become expressions of Art. This is the case of *chiaroscuro* (Italian for light-dark): a technique aimed to create a gradient of contrast between light and shadow. Artists of the Italian Renaissance, like Raffaello (see Fig. 6), used a well-defined set of rules to apply light and shadow to a specific shape in order to create the illusion of space and depth.

The highlight marks and defines the point where the light is reflected orthogonally. It is usually the closest region to the light source, that is, the location where light is most concentrated. Highlight is commonly represented and perceived as a bright white on glossy or reflective surfaces. Moving away from the highlight, since light hits the object less directly, it exhibits a gradually darker value of gray. This is the shading. The shadow is the darkened area on the opposite side of the light source, and the core shadow is the

Illusion in Art,

Fig. 6 Raffaello Sanzio,
The marriage of the Virgin
(1504), Pinacoteca di Brera,
Milan



darkest center of the darkened region. The reflected light surface is the back edge of an object observed in a shadowed area. It is caused by the light reflected from another area or created by a secondary light source. The final component is the cast shadow that imparts an object a clear sense of space.

Leonardo da Vinci improved the effect elicited by chiaroscuro by creating soft and fuzzy transitions from light to dark between colors and tones, without lines or borders (see Fig. 7). He obtained a soft lighting/darkening effect called “Sfumato” (from Italian “toned down” or “evaporated like smoke”).

Chiaroscuro is a powerful technique to create a monocular depth illusion on a flat canvas similarly and even more intensely than the watercolor illusion of Fig. 4. As in the watercolor illusion, the resulting depth due to the chiaroscuro does not create any illusoriness. None of the observers of the previous paintings would think or say: “this is an illusion.” Indeed, the realness attribute is the true illusion, that is, the illusion of an illusion that shows up not illusory. Likewise Fig. 4, the realness is due to the realistic effect, therefore there is not any apparent strangeness, sense of deception, mendacity, or oddity. The depicted subjects appear quite



Illusion in Art, Fig. 7 Leonardo da Vinci, *The Virgin and Child with Saint Anne and Saint John the Baptist*, drawing (1510–1513), National Gallery, London

realistic, and this is exactly the illusion, an illusion of reality **tout court**.

This requires that by reducing the realness attribute, the illusoriness is expected to increase as shown in **The listening room** by René Magritte

(Fig. 8). Here, the questions is: Is this a gigantic apple placed in a normal room or a real apple in a tiny room? Both visual combinations are possible, although the most likely is the first one, possibly due to the prior assumption that the room is the

reference frame for the apple, which consequently looks gigantic.

Nevertheless, the point is that none of the two outcomes is an illusion, but both are possible scenarios. Differently from the chiaroscuro of Figs. 7 and 8, the illusoriness is now quite strong. The final outcome manifests a clear sense of strangeness and oddity, possibly because in the real world there are no gigantic apples. Therefore, the apple seems unrealistic. This indicates that the true illusion is the illusoriness.

It is worth noting that the realistic representation does not coincide with the realness attribute in such a way that what is unrealistic does not necessarily elicit illusoriness, as demonstrated in Fig. 9a.

Here, the direction of the illumination, depicting the shading of the sphere, is inconsistent with the one suggested by the location of the shadow. However, in spite of the unrealistic representation, the inconsistency and, thus, the illusoriness are hardly noticed and the realness is taken for granted (inconsistency blindness). This outcome is supported by the spatial effect imparted by the pseudo-shadow of the sphere, which looks as if floating above the background flat plane, elicited both by the shape and location of the shadow in relation to the sphere. Further

inconsistent and unrealistic shadow-shading combinations are illustrated in Figs. 9b with the respective control (Figs. 9c). These figures indicate that shadow and shading are independent attributes that do not require to be reciprocally consistent or realistic, but each of them defines a specific independent visual variable.

Figure 10 shows more dramatic effects of this inconsistency blindness. The questions are: What is wrong in these artworks? Which is the correct and which is the wrong artwork?

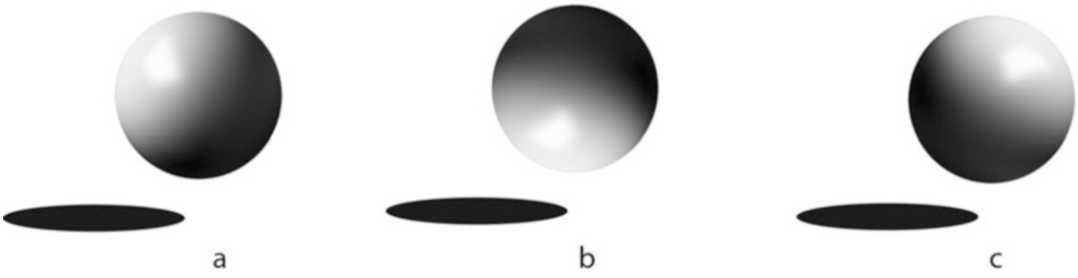
Taken together, all these examples denote that realness and illusoriness are two complementary antinomic attributes, according to which as one increases the other decreases.

There is a further important issue related to chiaroscuro, useful to deepen the connection between illusion and Art. It is well-known that the effects of depth and illumination imparted by chiaroscuro were abandoned or, rather, were totally abjured in Manet's *Le Dejeuner sur L'Herbe* ("the Luncheon on the Grass," Fig. 11), where the depicted subjects are depicted flat and illuminated by an impersonal and diffused light within an undefined perspective. Through Manet, a new meaning of Art comes to light. This points out that, in history of Art, a visual attribute was assumed as worthless when a new and, often,

Illusion in Art,

Fig. 8 René Magritte,
Listening room, 1952,
Menil collection





Illusion in Art, Fig. 9 Examples illustrating that the direction of the illumination, shown by the shading, can be inconsistent with the one suggested by the location of the shadow without being noticed and, thus, without illusoriness



Illusion in Art, Fig. 10 Examples of inconsistency blindness: what is wrong in these artworks? Which is the correct and which is the wrong artwork?

opposite property (e.g., volumetric vs. flat, real vs. unrealistic), replaced the previous one.

Moreover, assertion and negation of the same visual attributes marked the evolution of Art and, at the same time, advocated more intensely the question: what is Art?

Phenomenally, the forms of Art are considered like a self-contradictory representation or even like a succession of antinomic logically implied

attributes. The nature of these mutations is based on some kind of self-negation which favors the emergence of new properties and of new identities of Art. Paradoxically, the mutations of Art triggered its realness rather than its illusoriness. They might be the phenomenal engine letting Art to appear more and more as an independent object, a true perceptual object. Therefore, what is expected to destroy Art, due to its inner logical



Illusion in Art, Fig. 11 Édouard Manet, *The Luncheon on the Grass* (1863), Musée d'Orsay, Paris

antinomies, became, on the contrary, the foundation of its rebirth with an identity stronger than before. This is an interesting issue that needs to be deepened. The physiological mutations of Art state that, besides the physical domain, Art does not even have a clear ad univocal phenomenal domain. For instance, given the following famous paintings by well-known artists (see Fig. 12), basic and immediate questions are: What are the specific physical and phenomenological correlates of Art within this works? Where and what is Art within these paintings?

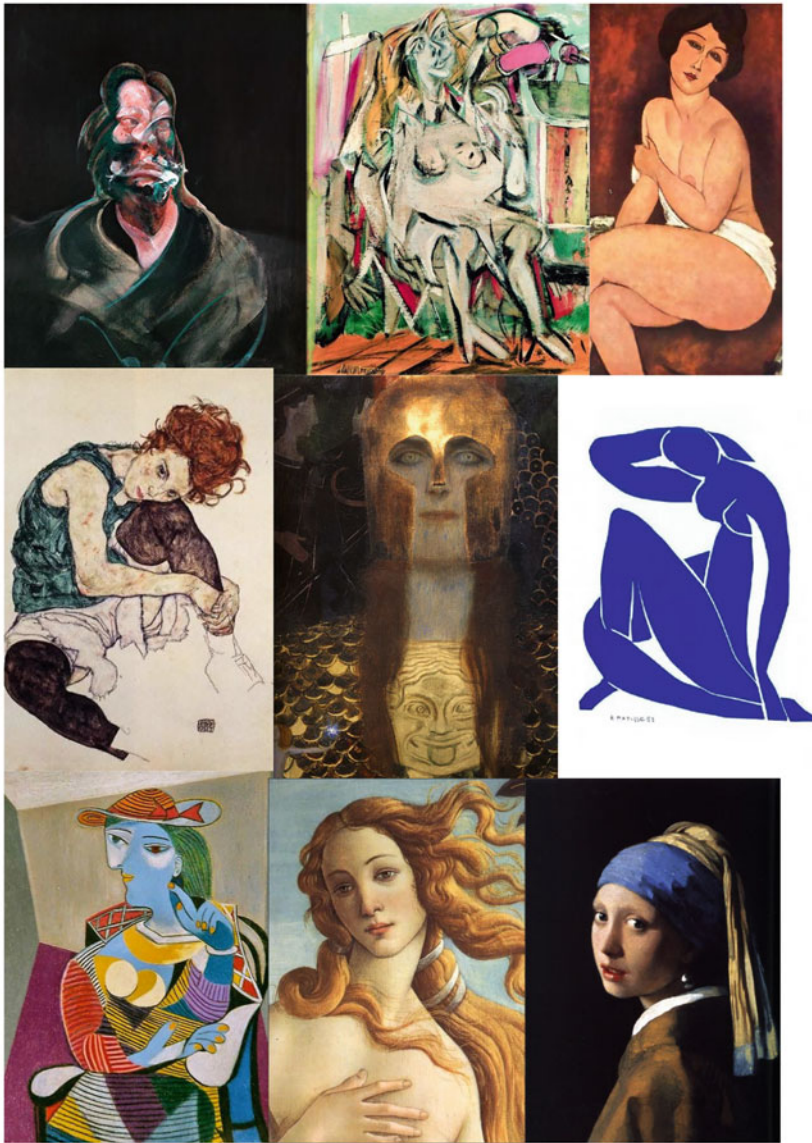
Even when Art is clearly recognized, the answer to these questions is hard or impossible. Art does not point out any clear phenomenal correlate and, vice versa, there is not any univocal visual attribute that identifies Art. It is even conceivable that different experts and scholars might locate Art on different attributes and meanings. Anyway, what remains constant in these paintings is the “idea” of Art and of something perceived as “artistic.” However, even this idea is undefined and undefinable inspiring a further question that requires to be answered: from what and where does the idea of Art pops up?

The main point is that, in spite of the undefined localization and identification, subjectivity, indefiniteness, and vagueness, Art is not conceived as illusory but real. It displays realness, although we know that it is not real. This implies a paradox that needs to be studied and solved.

To take a step in this direction, let us consider Malevich’s Suprematism, where Art is reduced to simple squares and/or circles (e.g., Fig. 13). More than in the previous paintings, the question “what and where is Art?” becomes compelling.

Paradoxically, these extreme reductions convey a stronger “idea” of Art, favoring its realness as a pure phenomenal object that does not need of a painting that shows specific abilities or techniques in the traditional sense. In short, the more extreme reduction of Art, the more maximum the phenomenal realness of the idea of Art. Suprematism and later movements freed Art from most of its canonical perceptual attributes and techniques becoming a visual meaning and an idea, which was further cleaned and highlighted in Conceptual Art.

What moved Art to take on the shape of a black square or circle on a white background? The



Illusion in Art, Fig. 12 Paintings by Francis Bacon, Willam de Kooning, Amedeo Modigliani, Egon Schiele, Gustav Klimt, Henri Matisse, Pablo Picasso, Sandro Botticelli, Johannes Vermeer. Where and what is Art within these paintings?

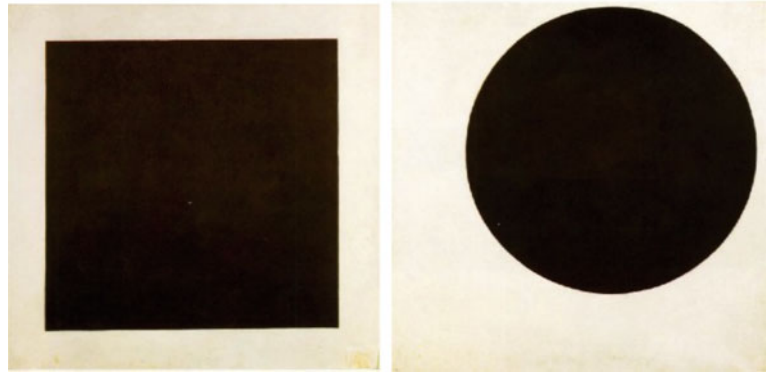
answer might be included in the following set of paradoxes. The square within Malevich Square is a trivial square; however, it is not “a square” because it is an artistic abstraction. Nevertheless, it is, *ipso facto*, a square since Art is reduced to a simple square in Suprematism. However, if Art can be reduced to a square, all the squares can be considered as Art, but if this is true it is also false, since all the squares are not Malevich Squares

and, as a consequence, they are not Art, but if they are not Art, then Art cannot be reduced to a square, thus, implying that Malevich Square is only a square and, as such, it can be Art since Art is brought to a square.

The circularity of the logic is self-evident. Each square is and is not a Malevich Square by following the same logic. Conversely, Malevich Square is and is not Art. Actually, everybody can create a

Illusion in Art,

Fig. 13 Kasimir Malevich, Black Square (1915) and black circle (1915), State Russian Museum, St. Petersburg



black square on a white background likewise Malevich; however, this square will never be a square in the meaning of Malevich Square. There is only one Malevich Square. All the others are only squares and not Malevich Squares.

These nested paradoxes might be responsible for the emergence of the idea of Art independently for its contents. They are likely behind what makes Art as a perceptual object and what elicits its realness, that is, the idea of Art as a meta-object. This occurs, even though, from a phenomenological point of view, all the squares can be Art in the sense of Malevich Square. Albeit all the squares are not Malevich Squares, they could be Malevich Squares.

The set of paradoxes can be simplified as follows: Malevich Square is a square that is not a square but not being a square it is a square. Moreover, in order to be artistic, the square must not be artistic by narrowing itself to a square; however, for these very reasons it is artistic (Pinna 2007, 2008).

These paradoxes are structurally reminiscent of Russel's paradox about the sets containing sets that are not members of themselves. Such paradoxes can be considered as interesting mechanisms of perceptual organization and reorganization of Art, triggering its continuous and unstoppable evolution.

Not only Malevich Square, but Art itself is a paradoxical phenomenal object according to which to be itself, that is, to be seen as such, it requires to switch and become something else. To be invariant as Art, namely, as a meta-object, it should vary in its instances, attributes, and creations. In short, Art

defines its identity if and only if it transforms itself. Therefore, to perceive and describe Art, we need to see and define its changes.

The origin of these paradoxes resides in the self-referential power of Art that comes from its independence from both physical and phenomenal domains. Art is then free to talk about itself and, as such, to create paradoxes different meanings of itself: Art both as an object and a meta-object. This interesting bipartition was clearly illustrated by Magritte's in *The Treachery of Images* and by the ready-made Duchamp's *Fountain* (Fig. 14).

In such a way, Art was able to talk about itself in terms of truth and falsehood, thus, evoking Eubulides paradox, stating "what I am saying now is a lie." This well-known paradox revealed the hard issue of self-reference in mathematics, as demonstrated by Gödel and Tarski.

Gödel, in his first incompleteness theorem, demonstrated that there is no consistent system of axioms able to prove all truths about arithmetic. Therefore, there will be statements on natural numbers that are true, although unprovable within the system. With his second theorem, he reveals that the system cannot demonstrate its own consistency.

The demonstration of the theorem, interesting for our purposes, is based on the following paradox: "This statement cannot be demonstrated." Therefore, if it can be proved, we obtain a falsehood, hence the system is incorrect. If it cannot be evinced, we have a truth, but now the system is incomplete. Therefore, the system is either incorrect or incomplete.

Illusion in Art,

Fig. 14 René Magritte, *The Treachery of Images*, Los Angeles County Museum of Art; Marcel Duchamp, *Fountain*, Lost artwork



Related to Gödel's theorems is Tarski's undefinability theorem, stating that no sufficiently rich language can represent its own semantics, therefore the metalanguage that is able to express the semantics of its object language must exceed that of the object language. It follows that theorems provable in the metalanguage cannot be demonstrated within the object language.

Thought Experiments on Illusions and Paradoxes of Art

Magritte and Duchamp artworks played with the same issues of mathematics by exploring and facing for the first time the sense of truth/falsehood as meta-logical categories of Art. But this is exactly what is phenomenally pointed out by illusoriness and realness. They are indeed the basic perceptual elements underlying the phenomenological game of Art based on the truth/falsehood antinomy. The double dichotomy truth/falsehood and illusoriness/realness builds the bridge between Art as object and Art as meta-object. This is a crucial point that asks for a more deep exploration from a logical and phenomenological perspective.

For this purpose, we can now perform a thought experiment similar to a mental model within an imaginary scenario. This procedure is useful to make clear our arguments, their implications and principles in an idealized context. This experiment can conceivably be also performed in a real lab. In history of science, thought experiments represented the most ancient pattern of mathematical proofs and, more recently, tools for Galileo's law, according to which falling objects

Questa non è ARTE

Illusion in Art, Fig. 15 *Conceptual art: "This is not Art" whose title is "This is Art". Is or is not this Art? The paradox of Art*

must fall at the same rate regardless of their masses, or means to prove the most famous Schrödinger's cat hypothesis.

The stimulus of our thought experiment is based on Conceptual art, according to which the idea or concept is the most and unique important aspect of the work. This is especially true when the concept is Art itself as shown in Fig. 15, where the sentence "Questa non è Arte" (Italian for "This is not Art") is our basic stimulus. (The thought experiment is imagined to be tested with Italian subjects.) This stimulus should be thought as if it is a true conceptual artwork made by a true artist. In addition, we have to imagine that title of this artwork is "Questa è Arte" ("This is Art").

Questa Non è ARTE

Against this background, we have an artistic content where the concept described is the most important predicate stating "this is not Art," namely, denying that this is Art, and a title that contradicts what is denied, thereby making the statement true. However, if it is true it is also false, since it states that this is not Art and vice versa. By extension, if one of the two parties is true, then it is at the same time false, since it is denied from its counterpart, but if it is false it is *ipso facto* true. What comes to light is a logically

self-contradictory double statement both true and false.

The logical antinomy remains unchanged if affirmation/denial of content and title is reversed, that is if the content becomes “This is Art” and the title “This is not Art.”

This thought experiment talks about Art and, at the same time, it can be Art itself, that is, a true artistic work, from which it talks about Art artistically through its paradoxes, not far from Magritte’s or Duchamp’s ways. By further continuing our thought experiment and imaging that it is true Art, we conceive again Art as an object and Art as a meta-object from an additional level of perception.

Nevertheless, as with Magritte’s and Duchamp’s artworks, we perceive also a clear sense of illusoriness vs. realness: realness of the inner logical antinomies and illusoriness of Art as a perceptual object and meta-object. Interestingly, the same perception pops up by reading Gödel’s and Tarski’s demonstrations in relation to the important strong implications for arithmetic.

We can now go beyond by making these perceptions even stronger with the following variation of the thought experiment. Readers are now invited to imagine the following new title “*Questa è Arte ma questo non è il titolo dell’opera*” (“This is Art but this is not the artwork title”). Under these conditions, another paradox within a paradox is revealed and this is related to the title that is and is not a title that talks about the content that talks about the concept of Art denying it. The chain of logical antinomies is now longer and the illusoriness vs. realness of Art stronger and stronger.

The illusoriness/realness dichotomy becomes more powerful if we think about the fact that everything we described above is based on a thought experiment. However, if we imagine that this is not a thought experiment but a true artwork, then everything is reversed in terms of illusoriness/realness.

The next immediate question is then: Is this Art or just a word game? The answer could be that it is both Art and a word game and that all the previous conditions are possible, but this is exactly the illusion of Art. This play of visual/cognitive levels

and meta-levels is based on the fact that Art is one of the most self-referential expressions and languages of the human mind, not different from mathematics.

There is a further interesting point to be considered. The exercise of logic with Conceptual art can be repeated at a small scale with every kind of painting (e.g., Raffaello’s *The marriage of the Virgin*), where signifier and signified can be considered as the two sides of the painted signs, where the signifier is the image represented (illusoriness) and the signified is the concept (realness), namely, the idea of what is represented (cf. de Saussure 1959). This depends again on the self-referential power of Art that necessarily leads to the previous paradoxes. It follows that also Conceptual Art can be considered as a natural consequence of the self-referential power of Art related to the illusoriness/realness dichotomy based on the truth/falsehood antinomy.

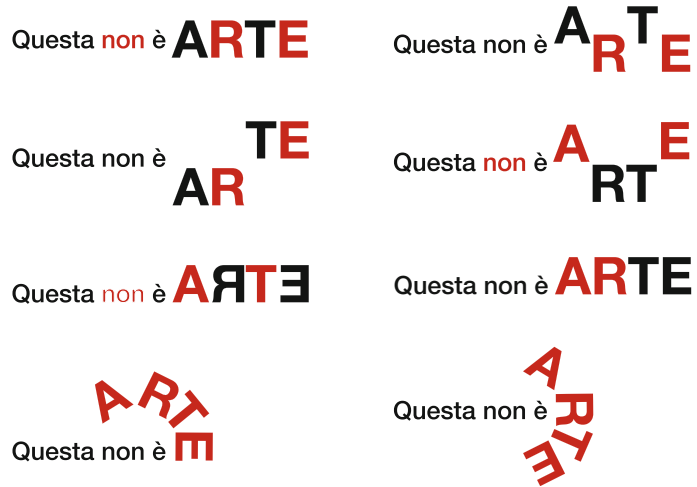
A final intriguing issue, coming to the fore as a final step of our thought experiment, is based on the following decision question: Is there a yes-no answer to the question “is this Art?”? In other words, is there a decision procedure, criterion, or some sort of algorithm for this basic question? Is there an effective method to determine the existence of Art within a painting or to decide its membership and belongingness to the set of Art?

This issue is reminiscent of Turing’s halting problem and the answer to this problem in Art is exactly the same, that is, negative, for the reasons highlighted above on the basis of the illusoriness/realness dichotomy.

A further effective way to prove phenomenally the decision problem is illustrated in several variations of the artwork of Fig. 15 (see Fig. 16). We can imagine again a thought experiment, where the questions related to these variations are: do they belong to Art? Which of them is more artistic?

As a matter of fact, all the variations may or may not belong to Art according to a criterion or a method to decide it. If we choose an aesthetic criterion (e.g., the most strange, irregular, beautiful) to decide what is Art among these writings, then we are betraying Conceptual Art, therefore none of them is Art within this meaning. If we choose a Conceptual criterion, then all of them

Illusion in Art,
Fig. 16 Variations of the
 artwork of Fig. 15



could be Art, but this implies that each of them is Art and, thus, that there is not any effective method to decide what is Art.

This becomes even more clear if we try to answer the following questions: What if in our thought experiment we imagine that only one of the variations of Fig. 16 is Art? What if none of them is Art? Why are they not Art? These questions lead straight to the decision problem where truth/falsehood and illusriness/realness are the primary players. Given these questions, it is impossible to think to a general criterion or an algorithm that always leads to a correct yes-or-no outcome. More generally, defining what Art is or is not is an undecidable problem.

To conclude this section, it is noteworthy that the inner auto-referential paradoxical nature and the problems of consistency, completeness, and decision, belonging to both Art and formal systems like arithmetic, denote and prove strong important connections between the two domains, likely distant in appearance only and waiting to be fully explored and studied.

Conclusions

In this entry we have shown that illusions, generally assumed as “deviations/errors or mismatches/disagreements” between geometrical/physical and phenomenal domains, are intriguing phenomena for both scientists and artists

based on two crucial phenomenal attributes called “illusriness” and “realness.” The illusriness is related to the naive appearance of the notion of illusion expressing unreal, ambiguous, fallacious, misleading, and deceptive attributes. As stated in the previous sections, in both Science and Art, not all illusions appear illusory, but some of them manifest an opposite attribute. This is the realness, which is only apparently absence or negation of illusriness. As a perceptual attribute, it imprints to stimuli and artworks a clear sense of being true as an actual thing with a real existence, definitely not imaginary or hallucinatory.

Illusriness and realness are shown to be related to the truth/falsehood antinomy, crucial for the evolution of Art and for its self-referential power, responsible for triggering interesting paradoxes and issues threatening the very existence of Art and, at the same time, speeding up its evolution by generating levels and meta-levels of itself. This was clearly exemplified by the astonishing expressions and developments of Art during the last century.

The basic paradoxes and issues, resulting from the thought experiments proposed in this entry, are strongly related to those already studied in mathematics by Gödel, Turing, and Tarski, whose theorems about consistency, completeness, decision, and truth demonstrated conclusive outcomes about formal systems similar to those phenomenally achieved in our experiments

about Art. These common outcomes suggest important connections between Mathematics and Art, according to which they are two high level form of thinking, likely distant in appearance only and requiring to be more deeply investigated and studied. In this regard, through this entry, we have provided new clues and shown new directions of research within the possible and the still unexplored scientific land bridging Mathematics to Art and placed between the science of illusions and Art.

Finally, the special combination of illusion and Art elicits the exploration of new words, selves, theories, and futures, starting from paradoxes that stimulate the emergence of languages and meta-languages, objects and meta-objects, and, possibly, consciousness and self-consciousness within the large domain of possible.

Cross-References

- [Consciousness](#)
- [Creativity](#)
- [Emergence](#)
- [Illusion in Perception](#)
- [Possibility Thinking](#)
- [Possible in Visual Arts](#)
- [Possible in Logic](#)
- [Possible in Psychology](#)
- [Reality](#)

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Illusion in Perception

Baingio Pinna

Department of Biomedical Sciences, University of Sassari, Sassari, Italy

Abstract

Illusions, similarly to phenomena, paradoxes, and unexpected outcomes, play a key role in science since they often represent, create or anticipate theoretical and epistemological problems. They trigger “as if,” “what if,” and “if only” thinking processes that are fundamental elements within scientific reasoning. The common denominator between these key points and their illusions is to go beyond the actual reality to explore the possible. In short, illusions represent the surprising discover activating the sense of possibility and the incipit to start the exploration of the large no-man land where the notion of possible grows.

Within modern vision science, illusions are attractive phenomena that play an important role as tools to explore vision under limiting psychophysical conditions. Illusions manifest at least two issues that challenge scientists. The first issue is related to the main definition of illusion, and it is based on the complexity of the mismatch between the two geometrical/physical and phenomenal domains. Basic questions are: What is geometrical/physical and what is phenomenal? What is the meaning of the mismatch/disagreement in between these two domains that are so different both scientifically and epistemologically? The second issue concerns the two different meanings of the term “illusion,” respectively related (i) to the logical demonstration of the illusion through the mismatch between domains and

(ii) to the phenomenal illusoriness, i.e., the perception of something having the nature of an illusion, something unreal, ambiguous, fallacious, and deceptive.

This entry begins with the most accepted definition of illusion and with a short description of the main scientific historical controversies on the meaning of illusion and on their place in science. Then, by means of 11 figures, the complexity and importance of illusions in vision science are demonstrated both logically and phenomenally. The starting figure is a simple and apparently not illusory condition of perceptual grouping, which gradually reveals its hidden illusions that increasingly manifest their phenomenal illusoriness. The conclusion of the entry is that the perception of illusion vs. illusoriness can be considered as a further challenge for scientists and it is useful to shed a new light within the biological meanings of visual perception and within the scientific no-man land between “sensory” and “cognitive” processes which are not fully explored yet.

Keywords

Perceptual illusion · Perceptual grouping · Motion perception · Shape perception

Illusion: Definition, History, Controversies

Illusions, similarly to phenomena, paradoxes, and unexpected outcomes, play a key role in science since they often represent, create or anticipate theoretical and epistemological problems. They trigger “as if,” “what if,” and “if only” thinking processes that are fundamental elements within scientific reasoning (Glăveanu 2018). The common denominator between these key points and the illusions is to go beyond the actual reality to explore the possible. In short, illusions represent the surprising discover activating the sense of possibility and the incipit to start the exploration of the large no-man land where the notion of possible grows.

Illusions are historically related to a “mismatch/disagreement” between the geometrical/

physical and the phenomenal domains (Robinson 1972; Coren and Girgus 1978; Gregory 2009; Vicario 2011; Pinna and Reeves 2017; Shapiro and Todorović 2017). This definition of “visual illusion” is commonly assumed and accepted, both explicitly and implicitly, when an illusory phenomenon is discovered and first brought to the attention of the scientific community. This entails that, illusions, as results of cognitive processes, are concerned first and foremost with the dichotomy between the possible and the actual or the real. It doesn’t mean that the possible is outside of reality, different or opposed to it (see next sections).

Other terms have also been used to define illusions, though with very similar meaning. These are “deviations” or “errors” in the perception of physical reality or “discrepancies” between perceptions and our knowledge of the physical reality (Pinna and Reeves 2017; Todorović 2016; Shapiro and Todorović 2017). Moreover, illusions have been suggested as the results of processing too much or too little information (Gibson 1979) or to arise at the algorithmic level with errors/biases in the estimation of optic flow parameters (Morgan 1996; Gregory 2009). These approaches were further extended to consider all perceptions as illusory and, consequently, either all is an illusion or nothing is (Noë 2002; Shapiro and Todorović 2017; Rose 2018). Finally, a harsh controversy, developed several times in the history of perception, suggests that the very concept of illusions is scientifically unnecessary to understand both vision and even the same phenomena perceived as illusions (see Braddick 1972, 2018; Shapiro and Todorović 2017).

Beyond and regardless of controversies and alternative approaches, the most accepted general idea of visual illusion is related to what appears to be present within the stimulus pattern that does not match/agree with what is perceived. This means that the necessary condition to perceive and demonstrate an illusion is the discovery of a clear inconsistency between these domains.

It is worth noting that a sense of vivid surprise and amazement is usually accompanied to the perception of illusions. This is what makes illusions attractive to both scholars and naive

observers. This is a phenomenological attribute of visual illusions, the illusoriness, never studied before although it is worths deep scientific attention.

In spite of the apparent simplicity and unambiguous uniqueness of the previous definition, after a closer inspection, it turns out to be intrinsically ambiguous both on the domains involved and on their logical and phenomenological relationship. Useful questions, to start a productive scientific argument on this matter, are the following: What is physical and what is phenomenal? What is a mismatch/disagreement in between two domains actually so different both scientifically and epistemologically?

Illusions together with the notion of possible imply the rethinking of the scientific status quo and the exploration of possible worlds and possible scientific and epistemological futures. The meaning of these questions and of their related issues are logically and phenomenally discussed in the next sections which go inside the complexity of the concepts of illusion and illusoriness (see Pinna 2013).

Illusory Deformations from Grouping

Going back to the main definition of illusion, i.e., of what appears to be present within the stimulus pattern that does not match/agree with what is perceived,” a basic significant issue emerges. Logically speaking, the content of the statement is related to the comparison between two perceptions, i.e., what appears to be present in the stimulus pattern and what is perceived. The physical/geometrical domain is something to be perceived thanks to some kind of direct or indirect measurement able to see its mismatch with the phenomenal codomain. They are indeed two perceptions or two different ways of perceiving the same object. As a matter of fact, to perceive a mismatch, it is tautologically necessary to perceive it, i.e., to compare the two perceived outcomes and by way of the comparison to perceive the related mismatch. Although this issue can, at a first sight, be considered tautological, too abstract or left-brained, it can become scientifically

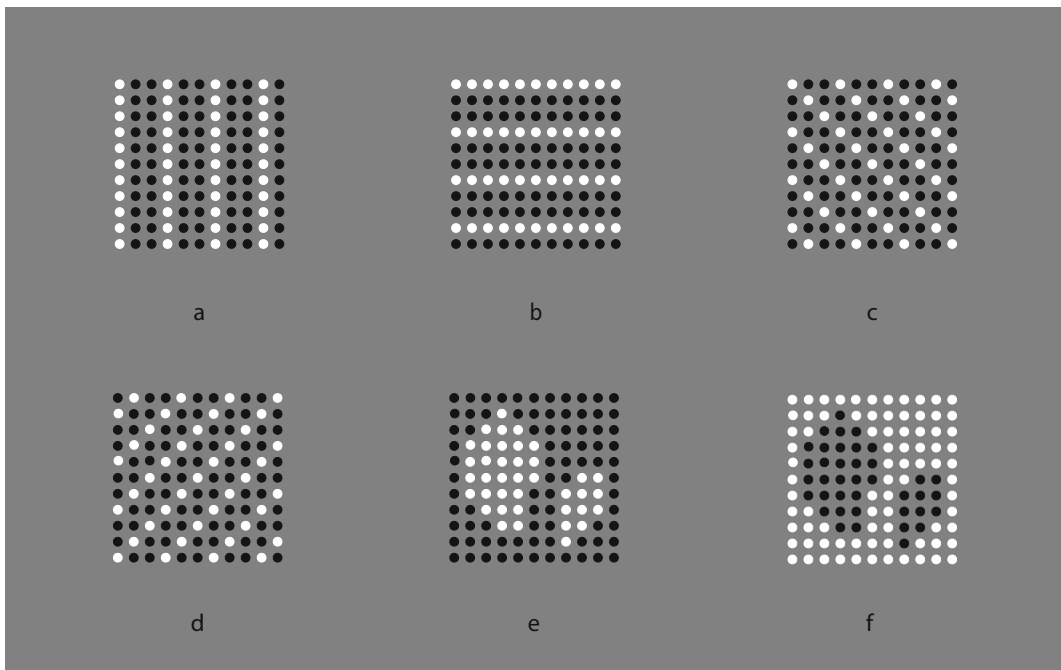
important in the light of the next figures and of the notion of illusoriness that they gradually and increasingly reveal.

Figure 1 shows five simple conditions made up of black and white dots placed on the corners of a vertical/horizontal lattice. Via very similar stimuli, Wertheimer (1922, 1923), first, studied the problem of perceptual organization in terms of grouping. The main questions he answered are: how do elements in the visual field “go together” to form an integrated percept? How do individual elements create larger wholes? To answer these questions, he explored and discovered the following well-known grouping principles: proximity, similarity, good continuation, closure, symmetry, convexity, *Prägnanz*, past experience, common fate, and parallelism. Quite simply, the similarity principle states that, all else being equal, the most similar elements are grouped together.

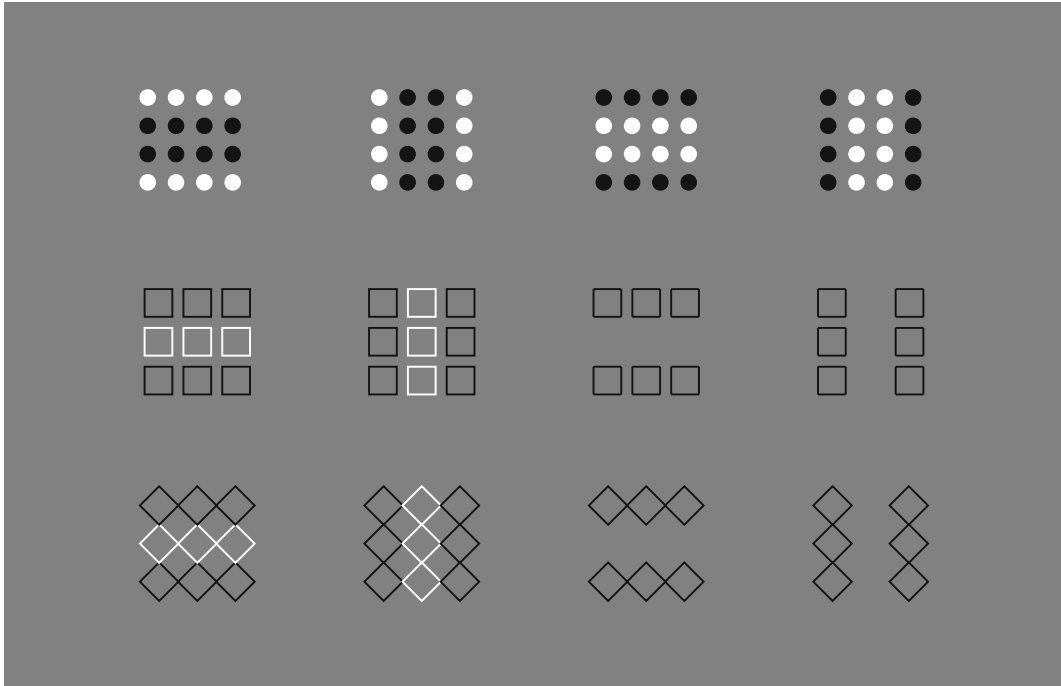
In Fig. 1, the similarity principle in terms of reversed contrast (contrast polarity) groups the dots in columns (Fig. 1a), rows (Fig. 1b), or obliquely (Figs. 1c-d) against the proximity

principle, since the amplitude of diagonals is longer than the horizontal/vertical ones. In Figs. 1e-f, similarity creates two blobs, made up of white/black dots, emerging as figures from the background of a squared lattice of black/white elements. This outcome demonstrates the seamless and close connection between figure-ground segregation (Rubin 1921) and grouping: the principles working in one domain operate also in the other domain, creating phenomenal *Gestalten* (pl. of Gestalt: form, shape, configuration, structure, arrangement, organization, figure).

Going back to the main definition of illusion, under the conditions of Fig. 1, what appears to be present within the stimulus pattern apparently matches and agrees with what is perceived, therefore there is no illusion at all. Both the mismatch and the property of being illusory are not perceived. Indeed, this kind of results were never included within any catalog of illusion but they are generally assumed as good examples of phenomenal grouping. In Layman’s terms, the grouping is not an illusion and it does not appear illusory.



Illusion in Perception, Fig. 1 The similarity principle: all else being equal, the most similar elements are grouped together creating columns, rows, oblique arrangements, and blobs



Illusion in Perception, Fig. 2 The whole geometrical squares, made up of dots and square checks, appear as horizontal or vertical rectangles on the basis of their horizontal or vertical grouping due to the similarity or proximity principles

In spite of this trivial conclusion, at closer observation, this first impression can be questioned. By carefully comparing Fig. 1a, b, the grouping in columns and rows slightly deforms in opposite directions the two whole geometrical square shapes of dots. The grouping in columns induces an upwards elongation of the whole square that appears like a vertical rectangle, while the grouping in rows favors the perception of a wide horizontal rectangle. These phenomena are more easily noticeable in Fig. 2 (first row), where two portions of Fig. 1a, b, made up of four by four dots with opposite contrast polarity, are illustrated.

Whole horizontal rectangles are clearly perceived when the grouping is horizontal, and elongated vertical rectangle, when the grouping is vertical. Similarly, the four whole geometrical squares (second row), made up of square checks, appear as horizontal or vertical rectangles on the basis of their horizontal or vertical grouping due to similarity and proximity principles. The same

kind of shape distortions is perceived in the third row, where the squares of the second row are now replaced with diamonds.

The question is now: are these conditions visual illusions? In terms of the main definition, the answer should be in the affirmative, and the theoretical conclusion has to be that grouping principles influence not only the way elements in the visual field “go together” to form an integrated, holistic percept, as suggested by Gestalt Psychologists, but also they affect the whole shape perception. It is worth noting that not only the whole square shape is affected by the similarity principle, but also the inner small squares and diamonds are deformed in the same way. This outcome is just noticeable (for further stronger results see Pinna 2010a, b, 2012).

The connection between grouping and illusions becomes stronger and stronger by following the rational and the phenomenal outcomes of the next figures.

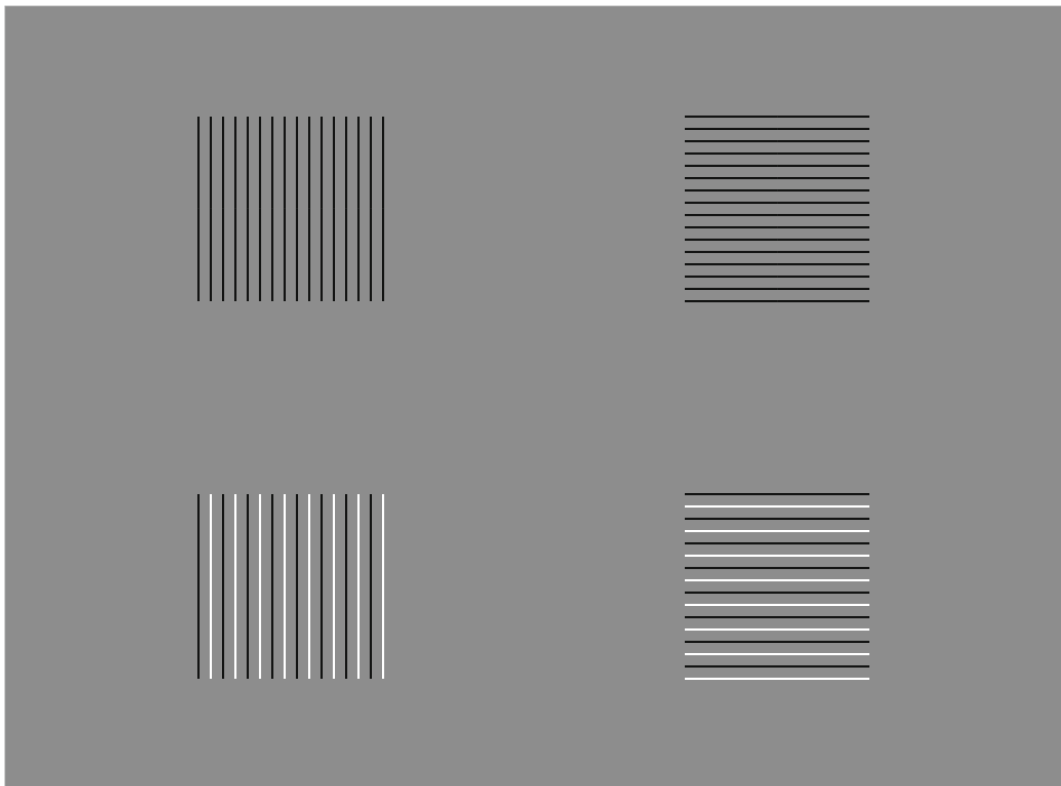
The rectangle illusion perceived in the previous figures is related to a well-known illusion, Helmholtz's square (Fig. 3), where a whole square appears wider like a horizontal rectangle when it is filled with vertical lines and higher, like a vertical rectangle, when filled with horizontal lines (Helmholtz von 1866; Da Pos and Zambianchi 1996).

By comparing the rectangle illusion and the Helmholtz's square, what immediately struck is the opposite direction of the illusory effects, although the same results apparently must be expected. An unsolvable antinomy seems to emerge from the two illusions. More specifically, since a square made up of vertical lines (columns) appears wider and larger than an identical square built with horizontal lines (rows), why does a square composed of dots grouped in columns appears, on the contrary, taller and narrower than an identical pattern where the elements are

horizontally grouped in rows? Apparently, the explanation of one effect (i.e., Helmholtz's square) leaves the other unexplained and vice versa. Therefore one phenomenon is a counterexample of the other.

What is clear is that both visual phenomena are illusions. Moreover, what is now emerging is the visual property that was invisible when Fig. 1 was first described. This is the illusoriness, namely, the attribute of something having the nature of an illusion. The illusoriness is here related to the mismatch between the geometry of the whole shape and its perception, but also to the apparent antinomy between the rectangle illusion and the Helmholtz's square. The strength of this attribute will increase in the next figures.

The question is now: can the two opposite phenomena be predicted by the same explanation? Apparently, the answer is negative. However, deeper phenomenological analysis on the



Illusion in Perception, Fig. 3 Two examples of Helmholtz's square illusion showing the widening of the square made up of vertical lines and its lengthening when the lines are horizontal

grouping principles shows that, under our conditions, there are at least two sources of perceptual organization. One is local and it belongs to each element component (dot or line-segment), the other is global and it is related to the direction of the grouping/ juxtaposition of elements. More in details, the local directional organization of the lines within Helmholtz's squares is the one that belongs to each line, i.e., respectively, vertical or horizontal. However, their global directional organization, imparted by grouping, are the opposite. It means that the vertical lines are distributed horizontally, while the horizontal ones, vertically. But this is exactly what happens also with the dots of Fig. 2, where their directional organization is the same as those in Helmholtz's squares, i.e., the dots are distributed horizontally or vertically similarly to the lines of the Helmholtz's squares. This implies that the only responsible of the whole shape, either when the elements are lines or dots, is the global grouping. Therefore, Helmholtz's square with vertical lines is perceived wider because of the horizontal distribution of lines, i.e., similarly to the horizontal grouping of dots of the rectangle illusion, while, conversely, the square with horizontal lines appears higher because of the vertical grouping of lines that is the same direction of the vertical grouping. In conclusion, the illusory deformation of the whole geometrical square follows the same directional organization imparted by the grouping of the inner elements (both lines or dots).

If this is true, then the effects of both the illusion of rectangle and Helmholtz's square can be significantly increased or, conversely, reduced by playing with the grouping principle of similarity, which appears to be the only responsible for the emergence of these illusions.

In the first row of Fig. 4, the outcomes of Helmholtz's square illusion are amplified, since two horizontal (left) and vertical (right) groupings operate synergistically. On the contrary, the illusions are drastically minimized or totally annulled in the second row, because the two groupings are now pitted one against the other.

Illusory shapes from grouping

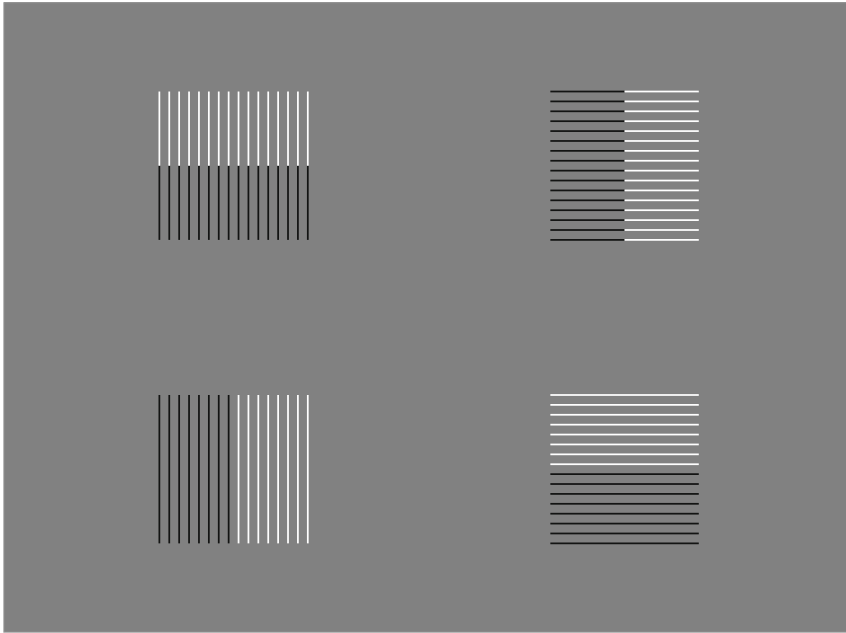
The previous results connect perceptual grouping with visual illusions and evoke the basic questions above mentioned: What is physical and what is phenomenal? What is a mismatch/disagreement between the two domains? Our outcomes might represent a preliminary answer to both questions by showing the difference between the two domains, namely, square vs. rectangle, and by demonstrating the disagreement between geometrical squares and the perceived rectangle illusions. However, this immediate deduction becomes more complex in light of the following phenomena that further expand the scientific meaning of the grouping principles.

In Fig. 5, the grouping by similarity among the square checks induces directional organizations along with the whole vertical diagonals (first row) or along the oblique sides (second row) of the whole pattern of check elements, thus, highlighting, respectively, sides and angles of the single checks, and angles and sides of the whole group of checks.

In the first pattern of the first row, square checks are geometrically arranged in a large diamond. Perceptually, the vertical organization along the diagonals/angles of the whole diamond and on the sides of the checks, imparted by the similarity principle, accentuates the perception of global diamond shape and favors the perception of a square in every single check. In other terms, the single squares are seen as squares and the global diamond is perceived as a large diamond.

Conversely, in the second pattern of the first row, the single diamonds are perceived as "diamonds" and the whole diamond pattern is viewed as a "diamond." These results apparently do not reveal any unexpected effect. However, by considering them as controls, the main illusory phenomena are clearly recognized in the next two patterns of Fig. 5.

In the first pattern of the second row, the whole diamond is observed as a rotated square and the single square checks are seen as diamonds. Conversely, in the second pattern, both the whole diamond and the single diamond checks are perceived as rotated squares. By focusing only on the



Illusion in Perception, Fig. 4 The size effect of Helmholtz's squares can be strengthened (first row) or weakened (second row) by pitting the sources of

directional organization, imparted by grouping principles, synergistically or one against the other

single checks of the second row, squares are noted as diamonds (left) and diamonds are distinguished as rotated squares.

These results are corroborated and emphasized by comparing these patterns of stimuli with the controls illustrated in Fig. 6.

Phenomenally (see Pinna 2010a, b), rotated squares and diamonds, due to their orientation determined by the similarity principle, reveal the two opposite attributes of the square check: the "sidedness," namely, the appearance of being flat and stable, and the "pointedness," i.e., the property of being sharp and unstable. Although these attributes can be geometrically considered symmetrical in strength, phenomenally, sidedness is much stronger than pointedness within the rotated square, while pointedness comes up more clearly within the diamond. Fig. 5 demonstrates that the salience of one of these two attributes can be easily accentuated by the similarity principle (see also Pinna 2010a, b, 2012, 2015).

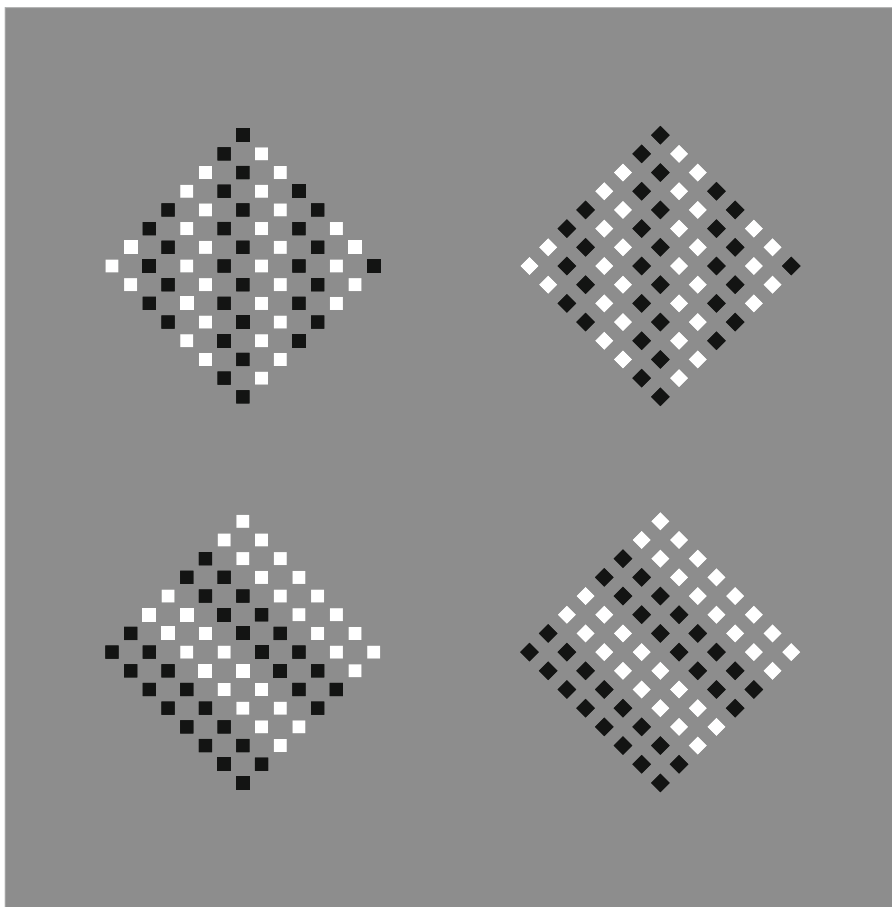
This assumes that a rotated square and a diamond are phenomenally two different shapes, not because they have two different names, but because they exhibit one of the two phenomenal

attributes, pointedness and sidedness, more strongly than the other. Therefore, they have different names since they show two different and opposite properties.

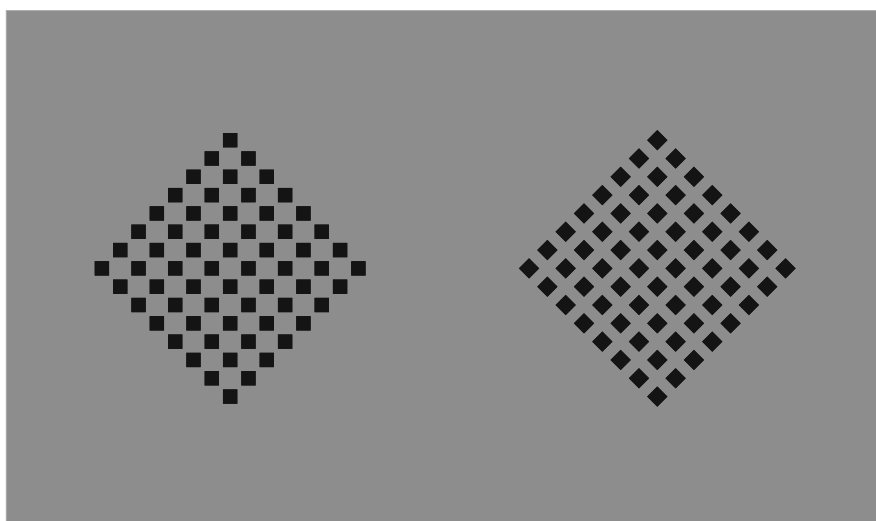
These results further increase the perception of illusoriness and extend the meaning of the similarity principle, considered in the beginning only as a principle of grouping without illusory effects. In the next section, the role of similarity as a generator of visual illusions and illusoriness is further explored.

Illusory Motion from Grouping

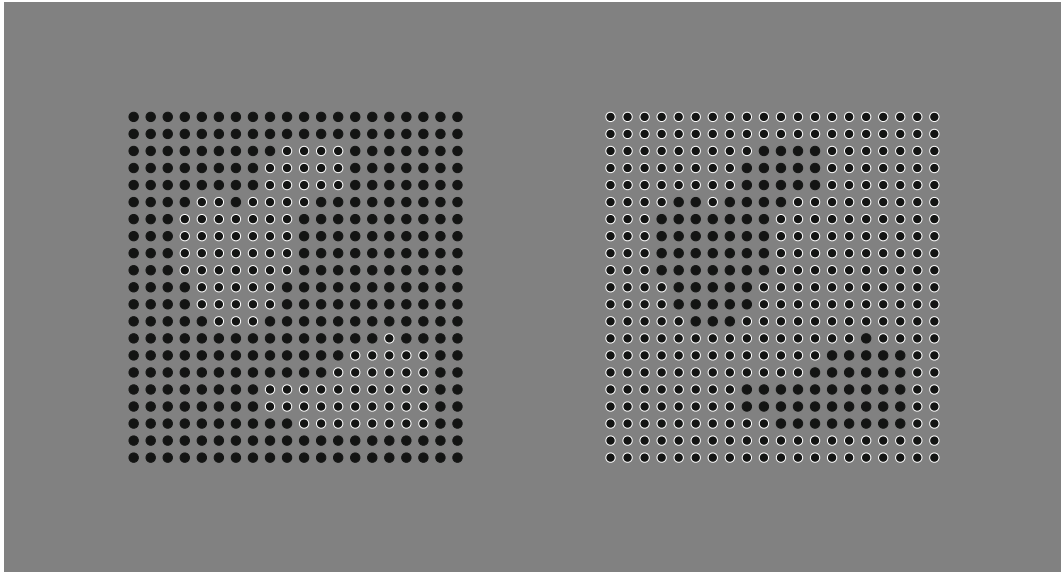
In Fig. 1e–f, two conditions in between figure-ground segregation and grouping were described. Again, this is not the full phenomenological story. In fact, a closer inspection points out an illusory dynamic and instability of the inner components that slightly appear as floating behind or in front of the surrounding elements. This effect, just noticeable, can be improved by increasing the similarity/dissimilarity between the two inner and surrounding regions as illustrated in Fig. 7.



Illusion in Perception, Fig. 5 Squares and diamonds perceived as squares and diamonds (first row); squares perceived as diamonds and diamond perceived as rotated squares (second row)



Illusion in Perception, Fig. 6 Controls for Fig. 5



Illusion in Perception, Fig. 7 Dissimilarity among elements and regions induces floating and sliding motion

Here sharp depth segregation is perceived with the inner regions as placed in front of the large square shape (on the left) or behind two holes (on the right). While the stimuli are irregularly weaved, illusory floating and sliding motions are perceived.

This illusory motion in depth is stronger in Fig. 8. The two central square frames amplifies the figure-ground segregation and the dissimilarity between the inner and outer regions of the two figures.

A strong illusoriness, due to the impression of instability and floating effect of the filled circles without any clear direction of motion, is represented in Fig. 9.

Another motion effect, imparted by the similarity/dissimilarity and grouping principles, is shown in Fig. 10. Under these conditions, the geometrical diamonds (squares rotated of 45°) are recognized as illusory elongated rectangles rotated in opposite directions in alternated columns. This is due to the directional accentuation elicited by the white dots placed on the opposite sides of each diamond, thus highlighting the sidedness attribute.

More importantly, Fig. 10 illustrates a clear sliding motion induced on the columns of illusory rectangles. This result turns out very easily when

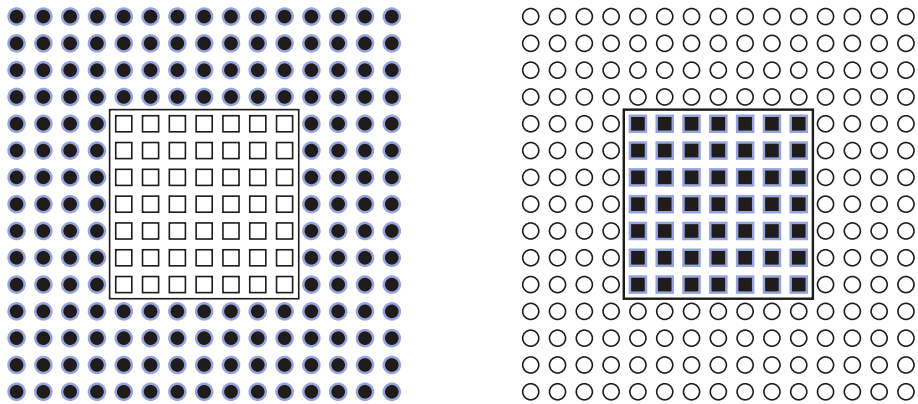
the gaze follows the tip of a pen moving vertically or horizontally across the check of the pattern but with attention and peripheral vision focused on the surrounding elements. While the pen is moving vertically the sliding motion is perceived horizontally and, vice versa, when the pen moves horizontally the illusory motion occurs vertically.

These results denote that, in Fig. 10, there are at least three different kinds of illusions, all consistent with the effect generated by similarity/dissimilarity among element components. They are: (i) deformations of the square shapes that appear elongated like rectangles in the directions of the white dots; (ii) checks observed as rotated rectangles, not as diamonds although geometrically they are diamonds; (iii) sliding motion in a direction opposite to the real motion.

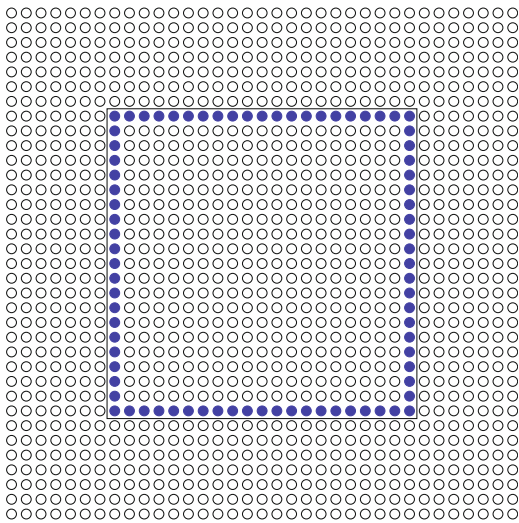
The apparent motion is further strengthened in Fig. 11 by chromatically differentiating the columns composed of ellipses oriented in orthogonal directions.

Conclusions: Illusion and Illusoriness

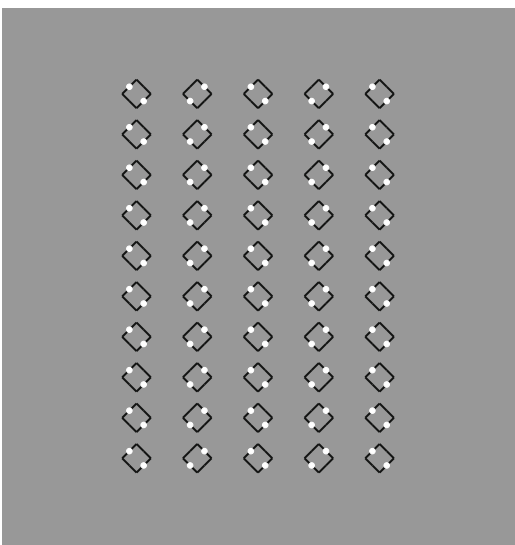
In this entry, Gestalt principles of grouping were demonstrated to induce strong visual illusions. As



Illusion in Perception, Fig. 8 A sharper dissimilarity and figure-ground segregation among regions elicit a stronger illusion of floating and sliding motion



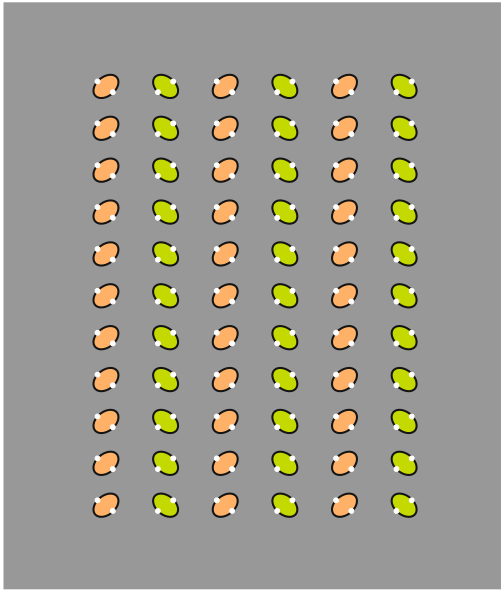
Illusion in Perception, Fig. 9 Illusoriness due to the appearance of instability and floating motion of the filled circles without any clear direction of motion



Illusion in Perception, Fig. 10 A strong sliding motion illusion in a direction perpendicular to the true motion

a matter of fact, these principles do not only group, but, by putting together similar elements and, at the same time, separating them from others, highlight directions, shape components, orientations, and create compelling visual illusions of shape and motion. This suggests that illusions are the results of processes of perceptual organization and, as a consequence, that they can be used as scientific tools to better understand the complex dynamics of visual organization beyond the classical Gestalt principles of grouping and

figure-ground segregation, which, under our conditions, have revealed clear scientific and theoretical limits. Especially by means of the last figures, it was also shown the intense sense of illusoriness, perceived in its full phenomenal meaning of something having the nature of an illusion, something unreal, ambiguous, fallacious, deceptive, false, fictitious, or misleading. These results, when compared with the ones of Fig. 1, indicates that the demonstration of an



Illusion in Perception, Fig. 11 The apparent motion is enhanced by chromatically differentiating the columns of orthogonal ellipses

illusion and the visual attribute of being illusory are two different issues. Even when the illusion is clearly ascertained, e.g., in Figs. 1a, b, the illusoriness does not necessarily pop out but it can remain weak or totally absent. Conversely, the illusoriness can come out at a first sight much earlier the discovery and the demonstration of the illusion (e.g., Fig. 11).

The illusoriness is perceived with different degrees of vividness, sometimes weakly, in other cases very strongly and independently from the mismatch between domains. Moreover, going from Figs. 1–2, the illusoriness arises as a consequence of cognitive bridge between different domains instead of a genuine perceptual process as in Fig. 11. Since the illusoriness of Fig. 1 is sometimes weak as a result of a logic process of comparison than a vivid outcome of a visual attribute, its vividness can be considered as a tool to measure the amplitude of the “visual” and “cognitive” processes involved and of the gap between them. On the contrary, in Fig. 11, the illusoriness is strongly noted before the mismatch is revealed.

Here, the illusoriness comes first, before the illusion, not discovered yet. This implies the independence of the notions of illusion and illusoriness that likely belong to different domains: cognitive, the former, and perceptual, the latter.

On the basis of the previous outcomes, the perception of illusion vs. illusoriness can be considered as a further and future possible challenge for vision scientists useful to shed new insights within the biological meanings of visual perception and within the no-man land between “sensory” and “cognitive” processes not fully explored yet.

In conclusions, the notion of possible triggered by visual illusions through “as if,” “what if,” and “if only” questions elicit new fundamental questions, issues and dichotomies useful to explore further ideas, concepts and scientific theories beyond the actual reality and toward the possible futures.

Cross-References

- [Consciousness](#)
- [Creativity](#)
- [Emergence](#)
- [Illusion in Art](#)
- [Possibility Thinking](#)
- [Possible in Logic](#)
- [Possible in Psychology](#)
- [Possible in Visual Arts](#)
- [Reality](#)

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Imagery

Alessandro Antonietti

Department of Psychology, Catholic University of the Sacred Heart, Milan, Italy

Abstract

Imagery, namely, the mental representation of objects and scenes which preserve some features of the corresponding sensorial experience, can play a role in inducing people to figure out possible situations. More precisely, thanks to its intrinsic characteristics, imagery allows people to generate and manipulate flexible representations through holistic thinking strategies to enhance performance in problem-solving and creative tasks. However, individual differences in the ability to manage imagery are reported. This stresses the need to train individuals to use imagery efficiently in order to lead them to imagine alternative states of the world.

Keywords

Creativity · Imagination · Individual differences · Mental representation · Problem-solving · Transformation · Visualization

Introduction

The term “imagery” refers to the complex of mental representations, which keep some aspects of the corresponding sensory experience (and this gives reason of their relation to perception) even though they are generated in the absence of the relevant physical stimulus (and this explains why they are included in the thinking processes) (Kosslyn 1994). In the framework of such a general definition, visual imagery concerns the picture we may have in our mind when we, for instance, remember the aspect of the façade of the house where we live even if we are not actually in front of it (it is argued that in a situation like

that we are employed our “mind’s eye”). A case of auditory imagery is when we are “hearing” in our mind how the national anthem sounds like if it would be played by a violin but not by trumpets as it usually occurs. In the same way, we can generate olfactory, gustative, tactile, and somatosensorial or kinesthetic mental images.

According to Kosslyn (1983), mental images play a role in cognitive processing because they can be meant both as symbolization and simulation tools. As *symbolization* tools, mental images stand for objects or concrete events, which are replaced by signs. As *simulation* tools, mental images allow people to form an internal representation that keeps an analogical correspondence with the external world. More precisely, we can distinguish two forms of simulation: the simulation of what is occurring in the reality or occurred in the past and the simulation of what might occur. In the first case, mental images *reproduce* the actual world (as in the example of the mental visualization of the house’s façade). In the second case, they *anticipate* (see ► “Anticipation”) or *create* possible worlds (as in the example of the auditory image reported before: even though the anthem has been never played by a violin, this may happen in the future). In this sense, imagery is linked to the topic of the “possible.”

Why Imagery Contributes to the “Possible”

Several biographical and autobiographical reports suggest that mental images led scientists to figure out how reality might be conceived by discovering alternative possibilities to understand it (Shepard 1978). For instance, Albert Einstein, at the age of 16, in a ► “Thought Experiments” imagined himself traveling at the speed of light sitting on the end of a light beam with a mirror in front of him. In this mental image, the observer could not ever see the image of the traveler. The light and the mirror, in fact, were traveling in the same direction and at the same speed, so that the mirror was always a little ahead of the beam and the traveler could not reach the mirror and could not see his reflection. From this mental image, Einstein concluded that there could be no observer

(i.e., no body) that can reach or exceed the speed of light. In this way, he went beyond the assumption, shared by past and contemporary physicists, that an object could achieve any speed, given a sufficient enough acceleration, and this change in comprehension was one of the bases of the subsequent theory of relativity (Bohm 1980). Also, inventors took benefit from mental images to devise instruments which were not still existing. As an example, Nikola Tesla (1956) designed neon lights and self-starting engines by visualizing the mechanical models of the prototype of these devices that he ran in his mind for several weeks in order to check if they might work (see ► “Innovation”).

Suggestions coming from this genre of anecdotes have been confirmed by empirical research (Forisha 1978; LeBoutillier and Marks 2003; Palmiero et al. 2016; Roskos-Ewoldsen et al. 1992). High correlations were found between the use and control of mental images and ► “Future Problem Solving” abilities (Van Garderen 2016), as well as ► “Divergent Thinking” (Forisha 1981). Imagery promotes creative (see ► “Creativity”) language skills linked to poetry writing (Wilson 2007). The spontaneous use of imagery in pre-school playing behavior is predictive of more creative skills in older children and adults (Singer and Singer 2006). The link between imagery and creativity also appears to be in the opposite direction: creativity induces a more frequent and complex use of mental imagery (Saracho 2002).

Why can imagery help people to conceive new views of the reality, not currently recognized or accepted (as in the case of philosophy and scientific theorizing), to figure out or predict what might occur in the reality (as in the case of discovery and ideation of experiments), and to create something which was not still existing (as in the case of the production technological and artistic artifacts)?

Imagery could be relevant to the ideation of the possible since mental images are not “photocopies” of objects or scenes because they do not correspond point-by-point to the original stimulus. They are mentally organized in structural terms, i.e., by grouping elements in such a way

as to form meaningful units. Hence, they allow people to quickly extrapolate the most important elements from the representation, thus producing a schematization in which the essential features are highlighted. This makes it easy to identify what might ► [“Social Change”](#) or be changed in a situation so as to achieve a different outcome (Antonietti 1991).

In addition, mental images can be analyzed and transformed in a holistic manner, i.e., by acting on all their parts simultaneously but not part-by-part. In this way, they favor the processing of information because, by allowing several operations to be carried out simultaneously, they reduce the cognitive load and, by permitting people to process information in parallel, i.e., in such a way that various aspects are taken into account simultaneously, they speed up the process (Kaufmann 1981). The possibility of taking several aspects into account simultaneously is particularly useful when it comes to operating in ambiguity and ► [“Uncertainty”](#), i.e., in situations in which it is not advisable to choose one direction straight away and exclude the others, but it is better to consider all possible paths since we have no sure clues as to whether one or the other is preferable (Kaufmann 1985).

A further reason is that mental images can be easily manipulated because they are extremely flexible representations. They also allow one to imagine transformations that would be impossible to implement physically and to move from one situation to another or make sudden associations, even between very distant elements. All these processes facilitate the conceiving of different states of the world.

On the basis of these arguments, Kaufmann (1985) introduced the notion of “level of programming” as a major determinant of the functional usefulness of imagery in problem-solving. A problem is programmed if people possess one or more procedures to handle it and, consequently, they do not need further information to proceed. A problem is nonprogrammed when it appears unstructured and/or requires that new information is acquired. When, in a nonprogrammed task, abstract or verbal processing leads to a block, imagery may yield a rearrangement of the problem

elements so that reasoning can go on productively. Visualization may result useful also in situations demanding novel or different approaches rather than routinized strategies. This author claimed that the relative importance of imagery in the solution process is high with unfamiliar problem and decreases with increasing problem familiarity. When a novel problem is given, individuals can use imagery to transform the situation in a perceptual-like manner so that new information can be identified and rough outlined drafts of potential solutions are designed.

How Imagery Can Be Processed

Kosslyn, Margolis, Barrett, Goldknopf, and Daly (1990) argued in favor of the componential nature of imagery by showing that it is possible to distinguish four distinct types of imagery skills: image generation, maintenance, inspection/scanning, and rotation. Indeed, we can identify more subtle kinds of processing.

Firstly, we *construct* a mental image. This may occur either thanks to a deliberate or a spontaneous process. The *deliberate* construction of a mental image of a possible state of the world can be hinted, for example, by verbal (self)instructions (e.g., “Imagine a cup of chocolate being poured over your knee – a situation you never experienced: What do you feel?”). Mental images can also come up to our mind involuntarily, as it happens during ► [“Dreams”](#) (Barrett 2001) or in mental state such as ► [“Daydreaming”](#), resting (Cai et al. 2018; Feng et al. 2019; Li et al. 2016), or mind-wandering (Chen et al. 2019; Gable et al. 2019; Leszczynski et al. 2017). It has been shown that sleep is a period of incubation that can lead to ► [“Insight”](#) through which we understand the world differently (Lewis et al. 2018; Barner et al. 2017; Leong et al. 2019; Cipolli et al. 2001, 2004; Schoch et al. 2019). In (at least) REM sleep, there is indeed some form of active, albeit involuntary, control of information that brings to light the existence of unusual or unsuspected relationships, so that a form of insight takes place. These conceptual changes also occur thanks to hypnagogic images (Cipolli et al. 2003) and in the so-called

microdreams (Nielsen 2017), short dreams that appear during falling asleep.

A mental image can be *scanned*. We can inspect mental image by “navigating” it or by considering a specific part of it and selecting it or focusing on it. Mental scanning can concern both the *explicit* parts of the image, namely, the parts which we would perceive if we were physically in that situation, or the *implicit* parts. For instance, in the case of visual images, we can identify the parts which are hidden, if we take a particular point of view, because some overlapping occurs or because of occlusion. (If we imagine a cube, we can represent not only the front and upper sides but also the back and bottom sides and the inner parts of the solid.) In this respect, it is worth reporting that children with autism and intellectual disability can represent mentally the occlusion of overlapping objects in the three-dimensional space better than typically developing peer (Treffert 2000) (see ► “Disability”).

A further way to process mental images is to *manipulate* them. As visual mental images, we can rotate or overturn them. As auditory images, we can reverse them (for instance, we can imagine what a melody would sound like if it were played starting at the end and moving toward the beginning). Thanks to these kinds of manipulation, we can represent alternative states of the world and anticipate what would happen if some actions would be applied to objects and situations.

The next process is *transforming*. The manipulations described before preserve the original image. Instead, when we transform a mental image, we change one or more characteristics of it. We can distort an image by expanding or reducing its size (or the speed in the case of auditory images and the intensity in the case of auditory, olfactory, gustative, and somatosensory images), by modifying its appearance (e.g., color), or by deforming the shape. We can also alter a mental image by subtracting or adding parts.

A transformative process, which appeared to be closely linked to the invention of new entities, is the mental visual synthesis, which Finke (1990) proved to be effective to lead individuals to create

original and useful objects. According to this transformation, persons are induced to combine some simple figures mentally and to explore the product of such a combination to realize an emerging meaning, which suggests to invent new products or find new ideas. This synthesis gives the possibility that a global picture resulting from the combination of several partial images has more meaning than its constituent parts. The outcome of the mental synthesis is in fact a new picture that could help to better understand the original meaning. It has been shown that people can be trained to apply this technique more efficiently if they are instructed to follow some strategies. For instance, they can be told that creative products are likely to be reached if figures are mentally manipulated in flexible and dynamic ways by enlarging, miniaturizing, moving, rotating, turning, overlapping them, by intersecting or including figures, and by combining them in unusual ways. It is equally effective the instruction to combine figures to obtain a whole image and then to search for possible different meanings of such an image by trying to interpret it in various manners (Antonietti and Martini 2000).

Individual Differences in Imagery

People differ in the extent to which they can generate, manipulate, and transform mental images, and these differences modulate the efficacy of the use of such images to conceive alternatives to the existing situations.

The feature of mental imagery that was investigated more is vividness (Marks 1973). Studies on the so-called (idiot) savants supported the notion that these individuals excel in constructing and inspecting detailed visual mental images. For example, “calendar calculators” (people who can say with surprising speed on what day of the week a date falls in either the past or future) perform the operations necessary for such calculations through mental visualization as if the subjects possessed an immense numeric “mnemonic tapestry” that they inspect when they compute the

required calculations (Sacks 1985). Furthermore, positive correlations between imagery vividness and divergent thinking skills have been reported in typically developing subjects (Rhodes 1981; Shaw 1985, 1986; Shaw and Demers 1986). The distinction between the ability to generate *object* images and *spatial* images has been more recently proposed (Blazhenkova and Kozhevnikov 2010). Some people are skilled in creating images with a lot of details which they visualize in their mind precisely and vividly. On the other hand, there are subjects who are able to produce schematic mental images where only the essential relationships are represented.

A distinct dimension of imagery skill is control, which concerns the ability to manipulate and transform mental images. Several findings suggest that the manipulation and transformation of mental images lead individuals to discover emerging meanings, which induce to conceive insightful ideas or to create new products (Barolo et al. 1990). However, a study carried out with children addressed the relationships between ► “[Intelligence](#)” and creativity and imagery skills. The performance in tasks requiring to mentally rotate, overturn, and distort visual images resulted to be correlated to intelligence but not to creativity. The opposite was true of the skill in synthesizing mental images. It is likely that the sequential nature of the former tasks needs the contribution of logical thinking, which plays no role in visual synthesis. The latter task, instead, is associated to creative thinking since parallel, holistic processing is beneficial in both (Antonietti and Colombo 2011–2012).

Indeed people differ as regards to their awareness about the roles that imagery plays to support ideation. Positive effects of mental visualization on problem-solving are higher when individuals are instructed to generate mental images after being given the problem, rather than when they receive such a hint before the problem is presented (Antonietti et al. 1994). This suggests that imagery generation is particularly useful when it is orientated toward a specific endpoint, namely, when visual images are created and manipulated by having in mind the goal to be

achieved. Images produced without the constraints and the directions imposed by such a goal can be interpreted and transformed in a wide range of ways, so that individuals are likely to follow unproductive lines of thinking. Thus, it seems that imagery plays a facilitating role in particular kinds of problems (as discussed before) and in peculiar phases of the thinking process. This stresses the need that, in order to employ mental images productively, persons should be able to identify such a kind of tasks and phases. It has been shown that some people consider imagery above all as a mental operation which allows “to see” the problem. They have in mind only a static function of the images. They do not think that they can transform mentally the problem and so they fail to rely on imagery to solve the problem (Antonietti 1999).

Summary

Imagery is a kind of mental representation which can support individuals when they are thinking to possible states of the world, either because they are prompted to find a solution to a problem or to improve the current situation or because they perceive the need to imagine alternative ways to figure out how things are or are managed (see ► “[Imagination](#)”). The intrinsic features of imagery and of the operations, which can be applied to mental images, give reason of why imagery is so relevant to achieve these goals. However, not all individuals can spontaneously generate and process mental images to take benefit from their functional properties.

Eckhoff and Urbach (2008) maintained that imagery is crucial for educators to promote creative thinking in informal and formal learning environments. This supports the attempts to enhance the ability to think to the possible by means of training activities based on imagery. This can be achieved both by devising structured educational programs aimed at improving imagery skills and at addressing such skills to the accomplishment of creative task and by inducing people to develop the spontaneous tendency to rely on mental

images when creativity is needed in everyday-life situations.

Cross-References

- [Anticipation](#)
- [Complexity](#)
- [Creative Problem-Solving](#)
- [Creativity](#)
- [Daydreaming](#)
- [Divergent Thinking](#)
- [Dreams](#)
- [Imagination](#)
- [Innovation](#)
- [Insight](#)
- [Intelligence](#)
- [Invention](#)
- [Mind Wandering](#)
- [Simulation](#)
- [Thought Experiments](#)
- [Uncertainty](#)

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Imagination

Tania Zittoun¹, Hana Hawlina¹ and Alex T. Gillespie²

¹Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

²Department of Psychological and Behavioural Science, London School of Economics and Political sciences, London, UK

Abstract

Imagination can be defined as the process by which we temporarily leave the here-and-now of current experiences, to explore and play with the past, the future, and alternative spheres of experience. In recent work, we have proposed a sociocultural approach to imagination, conceptualized as a “loop,” by which the mind or the flow of consciousness temporarily disengages from immediate situational demands (Zittoun, T., & Gillespie, A. (2016). *Imagination in human and cultural development*. London: Routledge). In this entry, we argue that the dynamics of imagination can lead to changes in the boundary between the possible and the impossible, and beyond. More specifically, we propose a three-layer model and show how, through a double-propelled motor (the self-other dynamic and the semiotic-material dynamic), imagination

enables us to explore – individually or collectively – the boundaries across the not-yet-imagined, the impossible, the possible, and the actual.

Keywords

Imagination · Possible · Impossible ·
Imaginative horizon · Sociocultural
psychology · Semiotic process

Imagination and the Possible

From Classical to Sociocultural Understanding of Imagination

Imagination can be defined as the process by which we temporarily leave the here-and-now of current experience, to explore and play with the past, the future, and alternative spheres of experience. In recent work, we have conceptualized such process as a “loop,” by which the mind or the flow of consciousness temporarily disengages from immediate situational demands (Zittoun and Gillespie 2016). Imagination breaks free from the logic of the material world; the possible and impossible are no longer subordinated to the actual, but expand and transform it.

Although imagination is an individual experience, we propose that it is also profoundly social and cultural. These simultaneously personal and cultural aspects are common to all semiotic activity (Valsiner 2007). For example, we use words to not only express but also constitute personal experiences, but the words come from our culture. Indeed, going further, the words (and in this sense our culture) enable new experiences through language (Vygotsky 1986) – such as a novel creating personal insight. And so it is with imagination: it arises at the intersection of immediate experience, personal history, culturally shared meaning complexes, and symbolic or cultural resources (such as books, films, narratives) (Zittoun and Gillespie 2016). What was imagined by our ancestors thousands of years ago, what is imagined today, and what might be imagined in the future are different because what is imaginable is part of culture, growing along with it, and, enabled by long-standing (i.e., narratives) and

new (i.e., virtual reality) technologies (Gillespie et al. 2018).

This sociocultural conceptualization of imagination departs from classical views in philosophy, psychology, and the social sciences, whereby imagination is a faculty, either opposed to cognition (Descartes 1641/1996), or a representational universe (Schwartz and Ryan 2003). A sociocultural approach resists the idea that imagination is essentially reproductive (Descartes 1996): although it assumes that imagination has to draw on existing material (Bartlett 1928; James 1890), it conceptualizes it as producing novelty. Finally, against approaches that consider imagination as the faculty to produce “images” of the mind (Descartes 1996), the current approach considers that imagination can occur through a variety of semiotic modes and be linked to a variety of sensory modalities, including embodied ones (Gfeller 2017; Hargreaves et al. 2012).

A sociocultural conceptualization of imagination begins with lived experience. It is triggered by current experiences, past experiences, or aspirations for the future. And once the loop is initiated, and experience breaks the bonds of the here-and-now, then three dimension of imagination become visible (Zittoun and Gillespie 2016). The first dimension is temporal: imagination can be oriented toward the past, and so remembering can be seen as imagination about the past; toward the future; and toward alternative presents. The second dimension is that of generalization: imagination can be about concrete and specific experiences, such as the taste of coffee, but can address general or abstract entities, such as the good in the world. Finally, the third dimension describes how plausible the current imagining can be considered in a given social setting: imagining becoming vegetarian in very plausible in twenty-first century Europe, but much less so in the stone age; imagining life on Mars has become much more plausible over the last century, although it has not yet been realized. This latter dimension is similar to the possible, but more socially defined (i.e., plausibility depends upon a community to make something not only possible but plausible).

But imagination is not just about our experience leaving the here-and-now and forever growing in either abstraction or implausibility. The loop of imagination brings us back to the present here-and-now. Through this return, imagination contributes to the world, creating personal experience and sometimes transforming our collective culture (e.g., it leads to a new discovery, an innovative idea or a new fantasy movie). In everyday life, one may be imagining because one needs a new bookshelf or because one is bored; one can draw on personal memories, go on the Internet, read an encyclopedia or the Bible, engage with arts or discuss with friends to feed one's imagination; and in closing the loop imagination can lead to a laugh, a bookshelf, or a political revolution.

If imagination is not merely a departure from reality but a contribution to the social construction of individual and collective future realities, then imagination plays a core role in human and cultural development. On the one hand, in early childhood, imagination is present in play and the creation on one's own zone of proximal development; in adolescence and adulthood, imagination is fundamental in the exploration of choices, definition of projects, but also daydreaming and remembering; in old age, imagination allows to reread one's lives or the course of history one has met, and still to be oriented toward the future and what is to come (Harris 2000; Hviid and Villadsen 2018; Singer and Singer 1992; Zittoun 2017; Zittoun and Saint-Laurent 2015; Zittoun and Sato 2018). On the other hand, culture and societies develop through the imagination of a few that may become shared or collective imagining, which support communities (Daiute 2018), and which may bring people to the Moon or to a revolution (Jovchelovitch and Hawlina 2018; Zittoun and Gillespie 2018).

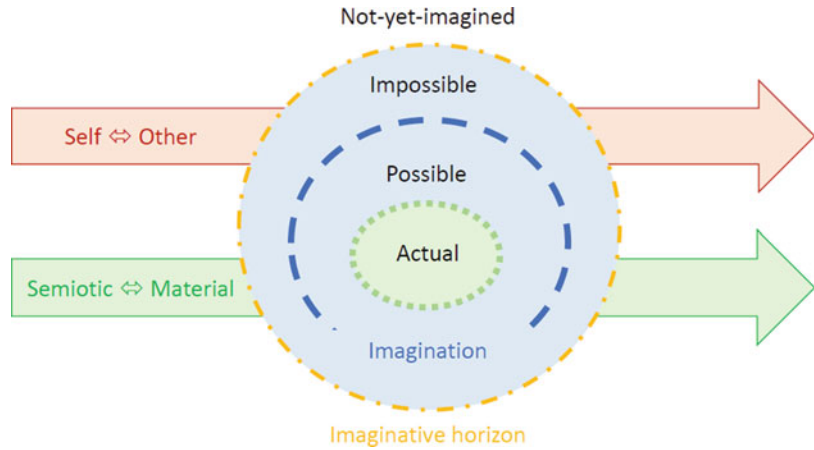
In summary, imagination is a multimodal, embodied, semiotically mediated, and deeply cultural and individual experience that can contribute not only to the development of the individual but also to the development of society (Zittoun and Gillespie 2016). Imagination is crucial for understanding humans as creative in constructing their own futures – futures that are not only limited to what is possible (e.g., a new invention) but can

also include the impossible (e.g., new fantasy landscape for a series of movies). Moreover, as we will show in the next section, tensions within and beyond imagination can lead to changes in the boundary between what is possible, and what is impossible. In other words, imagination is the core process by which we explore, individually or collectively, not only the possible (e.g., the past as it was or as it could have been, the present that we do not experience, or what is about to happen or will never do) but also the impossible (e.g., flying bicycles or a world without national borders), which is the germination of future possibility.

Imagination at the Boundaries of the Possible, the Impossible, and Beyond

Imagination, we will argue, is the process by which we can work, individually and collectively, at the boundaries between the not-yet-imagined, the impossible, the possible, and the actual. We represent these domains as nested sets, in Fig. 1. At the center is the actual, which includes that which has been socially actualized (possibility realized), then there is possibility itself, surrounded by impossibility, which in turn is surrounded by the infinity of the not-yet-imagined. In what follows, we will explore these domains in turn, and describe two processes that drive the re-shaping of these boundaries.

In sociocultural psychology, the possible has been conceptualized as a relational phenomenon arising out of tensions between self–other, person–world, and past–future (Glăveanu and Gillespie 2014). It is the human capacity to go beyond the real or the actual (i.e., what is), to engage in an exploration of what is not and what could be, and potentially expand the actual (Dewey 1910; Glăveanu 2018). In that sense, the actual and the possible are not opposites, but deeply interconnected since “our sense of possibility and its exploration are grounded in what is already actualised and, most of all, transform our experience of the actual” (Glăveanu 2018, p. 519). And once a possibility has been actualized and became a shared cultural element, it can act as a novel resource used to imagine further possibilities. Hence engaging with the limits of the

Imagination,**Fig. 1** Imagination and the possible

possible enables us to escape the material constraints of a situation and re-envision the situation in terms of what we can make it become (Unger 2007). Thus, imagination acts precisely as the process that sustains, nourishes, and transforms the possible. Imagination operates in recursive looping between the actual and the possible, resulting in a dynamic co-construction where the actual shapes the possible and provides resources for imagining alternatives, while the possible can steer action (individual or collective) to reshape the actual.

Imagination, in our conceptualization, subsumes not only what is actual or possible but also what is impossible; it is a larger process through which these elements are reconfigured. Magical kingdoms with unicorns and dragons, planets where people can change sex on a whim, or alternative worlds if another party had won the elections have no possibility of actualization, yet they motivate possibility (i.e., inspiring the writing of a novel or the formation of a new political movement). Because it is often characterized by the impossible in contrast to the possible, the imagination was often regarded as infantile, escapist, unproductive, primitive, and even associated with mental disorders (Haiven and Khasnabish 2010). Nevertheless, reversing or completely suspending reality from time to time can foster a playful and open-ended engagement with the world, loosening the fixation of how things are and questioning the existing state of affairs. If the domain of the possible is ever to

expand into the domain of the impossible, it requires a reconfiguring of this boundary through the imagination. Most social movements and political revolutions began with an impossible idea, and then, as the imagination became shared, the plausibility increased, the impossible became possible and, sometimes, even actual (e.g., the welfare state). Such transformations of the boundary between the possible and the impossible can radically transform the existing state of affairs (Day 2016; Khasnabish and Haiven 2014; Pérez Huenteo 2019).

From this point of view, even the far fringes of impossibility are important. Beyond the impossible (i.e., what a person, or humans as a group, have conceived as impossible) is the domain of the not-yet-imaginable (i.e., that which has not even been imagined as either possible or impossible). In effect, the scope of imagination of individuals and societies is bounded by a so-called imaginative horizon (Crapanzano 2004; Zittoun and Gillespie 2016), the limit of our symbolic universes that can only be defined retrospectively, once it has been pushed outward/extended (Bruner 1990) or from an outside perspective (Crapanzano 2004). Hence, the domain of the not-yet-imagined that can only be seen with hindsight includes, for instance, the smartphone or gene manipulation during the Palaeolithic Age. What is not-yet-imagined today is logically impossible to conceptualize or write about. While our society often celebrates people and groups who manage to turn the impossible into

the possible (i.e., the Moon landing, heart transplants), the imaginative achievement of discovering a new impossibility should not be underestimated; for these are the germinations of tomorrows possibilities.

The not-yet-imagined is thus an opaque space of potential that can be accessed by the imagination only through the emergence of novel ideas and artifacts. The imaginative horizon is often set by the social and technological development of the society, for example in the Middle Ages, the idea of live televised news would have been unimaginable, whereas in 1900 when photography and telephones were already familiar technologies, John Elfreth Watkins (1900) was able to foresee it happening in the next 100 years. On the other hand, flying has long been within human's imaginative horizon. The sight of birds flying has motivated inventors for millennia, but the majority of people imagined it to be impossible.

The boundaries between the not-yet-imagined, the impossible, the possible, and the actual are crossed and repositioned through to the dynamics of imagination. This is the case individually, when for instance a child starts imagining becoming a parent, which had previously been not-yet-imagined; but, this can still be impossible (e.g., the child is too young) and then a possibility (e.g., they become old enough), which then may be actualized or not. The boundaries are also crossed in the case of social change and history, in which case the collective imagination is at work. In such cases, imagination of, or at the boundary is often the site of social contestation. This can be in the direction from the impossible to the actual, such as in the case of the civil rights or woman suffrage movements, or in the opposite direction of curtailing human rights and closing down semantic and physical borders, which narrow the scope of the possible. At these boundaries two dynamics are visible.

First, boundary changes can be generated by differences of perspective about whether something is possible or impossible, which we will call a *self-other* dynamic. Two partners may imagine refurbishing a house, but their divergent perspectives may bring discussion about what is impossible to consider, what could be done, and

which design will be actualized. Minorities debate with majorities about what is or is not possible, proposing, resisting, and creating alternatives that can be threatening (Gillespie 2008). Recruiting a majority can make something impossible in the sense of not being socially feasible (i.e., taboos, unquestioned assumptions), or it can mobilize the resources necessary to make something not only possible but actual (i.e., a Moon landing). Normative imaginative horizons in the eighteenth century, when slavery was widespread in the USA, made it unimaginable for most people that a person of color could become the country's president, which only became possible after centuries of contestation and actualized in 2008.

Second, boundary changes can be initiated by tensions between the semiotic domain and the material or concrete domain, a *semiotic-material* dynamic. At an individual level, after the end of communism in the Czech Republic when deep fryers were imported from the west, young Pavel discovered the (embodied) taste of fries that enabled him to imagine the possibility of opening a food-truck (Zittoun 2017). Conversely, imagining certain tennis moves may actually facilitate their realization (Markman et al. 2009). Such dynamics also take place collectively: not only can the real puncture the symbolic domain (i.e., the Chernobyl reactor failure demanded acknowledgment that such a failure was possible), but the symbolic domain can shape the real (i.e., belief that heavier than air crafts could fly led to their actualization).

Propelled by these two dynamic tensions (self-other and semiotic-material) imagination becomes the main process that enables people and societies to move an idea across boundaries and to expand or contract the boundaries themselves. There are many accounts of science fiction inspiring scientific research that led to the realization of initially not-yet-imagined or impossible ideas, such as space travel, virtual reality devices, and self-driving cars (Alkon 2013; Johnson 2011; Zittoun and Gillespie 2016). In such cases there are actually two landmark moments: first, when an impossible idea is first imagined (i.e., Lucian in *A True History* in 125–180 a.c. imagining visiting the Moon (Lucian 2014)), and second, when it

transforms from a possibility into actuality (i.e., landing on the Moon). From initially imagined impossibility to actualization, individual and collective imagination have been at work. The movement of imagination was supported by a constant self-other dynamic, for instance through the ideological battle between the USSR and the USA cloaked as a technological race. Also, it was energized by the dynamic taking place between the semiotic and the actual: Meliès (1902) needed to have seen the first canon to imagine shooting astronauts to the moon using a huge canon (Zittoun and Gillespie 2018). Today, half a century after the Moon landing, its realization is still doubted by a small, but vocal minority who insist that reaching the Moon remains impossible – this is an extreme example of how different communities can maintain different perspectives on what is impossible, possible, and actual. What is often at stake is not so much what is ultimately possible or impossible, but rather the extent to which we are collectively choosing to dedicate resources (money, legislation, education) toward creating possibility. Possibility is not, in this sense, an inherent property of the world; rather, it is a social achievement.

In many cases, we can see a progression from the not-yet-imagined to the impossible, becoming possible, and finally actualized. However, the process is rarely so linear and unidirectional; there are often counter-movements and resistance. We can also observe the reverse processes, where things that were once possible become impossible or even unimaginable (e.g., collective forgetting, loss of resources and cultural artifacts, censorship).

In the USA in 1960s and 1970s, second wave feminists fought for bodily autonomy and reproductive rights, which caused a seismic cultural shift and led to the legalization of abortion in 1973 (Kline 2010). However, in the first months of 2019, over 20 US states introduced some form of an abortion ban in their legislature (“What’s going on with US abortion rights?” 2019). If before, notions and rights that were initially seen as impossible for women became progressively

actualized, today we are witnessing a reversal where choices are taken away and what used to be possible is becoming less possible. This shift is driven by the differences in perspectives on gender equality, reproduction, religious beliefs, and autonomy vs. control over women’s bodies, contested in courts and public debates as opposing parties re-negotiate and constrain the normative boundaries. Such narrowing down of the possible is not evident only on the societal level, but it also reconfigures what is possible and impossible in the life trajectories of individual women and their families, as they have to re-imagine their lives through the prescribed channels of compelled motherhood, while previous possibilities may become impossible (e.g., going to college or different career trajectories).

Conclusion: We Are Responsible for Actualizing Our Own Future

Our review of the relation between imagination and possibility has taken us to the heart of how humans build their own futures. Of course, humans are constrained not only by the laws of physics but also their own norms and expectations (Valsiner and Brinkmann 2016). They can expand these through imagination, yet as past experiences, existing cultural artifacts, narratives, and social representations act as the necessary resources for imagining, these can also channel the imagination along predictable pathways and constrain what is possible to imagine. But, equally, the history of human culture teaches us that the not-yet-imagined likely has many surprises in store for us and what is impossible for one generation can become possible for the next. While such an expansion of human capability can seem progressive and enabling (Dewey 1916), it needs to be tempered by recognizing our own responsibility in the process (Unger 2007). Human imaginations, and decisions to bring some impossibilities to the realm of the possible, or the other way around, will shape the impact of climate change, the extent of inequalities, and the

course of the digital revolution. The paths we choose will create not only our future but our resources for imagining subsequent futures. Once something that was initially unimaginable becomes possible or actualized, it becomes itself a potential resource for subsequent imaginings, opening up new spaces of possibilities, impossibilities, and questions that catalyze and canalize future imaginative horizons.

Cross-References

- [Constructive Memory](#)
- [Creativity](#)
- [Daydreaming](#)
- [Innovation](#)
- [Invention](#)
- [Old Age](#)
- [Possible in Human Development](#)
- [Possible in Psychology](#)
- [Possible in Sociology](#)
- [Possible Worlds](#)
- [Social Change](#)

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Impermanence

Kiene Brillenburg Wurth
Comparative Literature, Utrecht University,
Utrecht, The Netherlands

Abstract

Impermanence is a central concept in Buddhist philosophies. These philosophies – in their immense diversity, as part of different schools or currents – generally hold that suffering is needlessly created through an attachment to things that had seemed permanent, or that one had *craved to be* permanent. However, in the world according to Buddhism, life is movement or change: everything is in process, and bound for decay. If one thinks one is held together by a substantial, continuous I in this life, one is mistaken. No-self exists. What one thinks of as an I, is an ever-changing configuration of aggregates or skandhas: bundles of matter, sensation, perception, mental formation, and consciousness. Buddhist philosophies thus challenge thinking, feeling humans to let go of the self, and to re-consider themselves as coming out of this world: as entangled with the earth. How can such a relational “thinking otherwise” about human no-selves change academic ideas on creativity? How can creativity, and creative expression, in other words, be rethought *beyond a self*?

Keywords

(Five) Aggregates/Skandhas · Attachment (*upādāna*)/non-attachment (*nekhamma*/Chinese (in Zen Buddhism) *wú niàn* (無念) or no-thought) · Cartesianism · Creativity · Creativity beyond a self · Decoloniality · Distributed Creativity · Ecocriticism/ Ecofeminism · Genius · Historiometric research into creativity · Humanities ·

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Impermanence (*aniccā*) · Processual view of the self · No-self (impermanent self) (*anattā*) · Relationality/entanglement · Suffering (*dukkha*) · David Hume · Immanuel Kant · Thich Naht Hanh · Val Plumwood · Arthur Schopenhauer · Walpola Rahula Thero · Alan Watts

It is still believed that Buddhist philosophies (including a range of different schools or currents) pivot around the idea that life is permanent suffering (*dukkha*), and that the only way to be released from such suffering is detachment. Nineteenth-century European philosophers like Arthur Schopenhauer, duly influenced by Buddhism, have helped to foster this belief: at the root of suffering is craving, and craving is endless (Schopenhauer). When craving is satisfied, its cycle starts anew – and so does suffering – and when craving is not satisfied, suffering continues with it. A way out of this hopeless loop, Schopenhauer believed, is aesthetic contemplation. Such contemplation amounts to brief moments in which one feels detached from the world of craving as a *pure subject of knowing*, cognizant only of Ideas, not of things to be had (Schopenhauer, Brillenburg Wurth). Yet, these moments are moments only: intermittent, gone before you know it, to be eclipsed by craving again – though insight may transform suffering in time. Schopenhauer’s philosophy is pessimistic, as he did not believe in progress like Hegel did, but such pessimism is in no way key to Buddhism. In fact, whenever one sees an image of the Buddha, one encounters a smiling, content, and peaceful countenance. That peacefulness, it will be seen in this section, comes with the insight that one merely needs to let go of certain erroneous assumptions – of ignorance – to let go of suffering. This insight boils down to the fact that suffering is needlessly created through an attachment to things that had seemed permanent, or that one had *craved to be* permanent. However, in Buddhist philosophies, life is movement, change; everything in life is impermanent, even our very selves. Indeed, as Walpola Rahula stressed, *dukkha* itself, familiarly meaning suffering, misery, and the like, also has a deeper meaning of

insubstantiality and impermanence (*aniccā*) (17). Finding happiness in life is coming to terms with impermanence, including that of the self, in so far as a self is conceived as the illusion of a unified whole of one’s conscious life: an extensive I.

In this entry, I explore this idea of an impermanent self in Buddhist philosophies, while also assessing the implications of such impermanence to European and Anglo-American research in creativity. What are the possibilities for such research when we disengage creative thinking from ideas of a continuous I? What, in other words, is the potential of Buddhist philosophies to possibility and creativity studies: what will creativity entail beyond encrusted conceptions of a permanent, stable or “owned” self? If suffering in Buddhist philosophies (ranging from Theravada and Mahayana to Neo-Buddhism) arises out of an ignorant attachment to illusions of permanence, a release from such attachment may also release scholars from ill-conceived ideas of autonomy, genius, achievement, and innovation that all come, in one way or another, with the idea of a separate self. How can the idea of such an “owned” self be de-composed? The question is relevant, as ideas of “the” self, as well as most of the cultural terms of individuation (as regards gender, class, and race) in the global North, have been deconstructed as random, suppressing, and violent (Kitchner). Decomposing the self as an agent of creativity, I argue, thus also opens up decolonial pathways in creativity and possibility studies: a thinking otherwise (Mignolo/Walsh).

In a popular talk entitled “Myth of Myself” (1972, from the *Tao Philosophy Series*), the controversial philosopher and public speaker Alan Watts expressed his amazement at how humans in “Western” cultures speak about themselves. “Most of us,” he said, “feel ‘I’ – ego, myself, my source of consciousness – to be a center of awareness and of a source of action that resides in the middle of a bag of skin.” One typically thinks of this I as a substance located somewhere “behind the eyes and between the ears,” rather than being an integral part of the body-as-process (Watts [1972] 2019: 1.1.7, no page). Hence, Watts continued,

We are not accustomed to say, “I am a body.” We rather say, “I have a body.” We do not say, “I beat my heart” in the same way as we say, “I walk,

I think, I talk.” We feel that our heart beats itself, and that has nothing very much to do with “I.” In other words, we do not regard “I, myself” as identical with our whole physical organism. (Watts 1.1.7)

Not saying “I beat my heart” or “I am my body” indicates what – ecofeminist philosophers like Val Plumwood have called – a hyper-separation of mind and body: following the Cartesian dictum “I think, therefore I am,” dominant and normative modes of thinking in the global North have conceived of the human as being the rational (and male) other of nature (Plumwood). By contrast, following East Asian currents of thinking, Watts starts from a *relational* model of mind and body, humans and other beings, or “nature”. Though many people think and speak as if they “came into this world,” Watts argues, the opposite is in fact the case: they “come out of it.” “What,” Watts continues, “do you think you are? Supposing this world is a tree. Are you leaves on its branches or are you a bunch of birds that settled on a dead old tree from somewhere else?” The earth, he concludes, “peoples,” just as an apple tree “apples;” people are expressions or “symptoms” of the earth (Watts 2019: 1.1.7). To that extent, people are *entangled* with the earth: they *partake* of earth elements. The idea of such entanglement is central to current ecological critiques, but it has circulated in Buddhist and Taoist philosophies for thousands of years already (Ghosh, Clark).

The illusion of a gap between mind and body, reason and sensation, humans and earth, and humans and other earthlings has triggered a hostile stance toward nature. Since the Enlightenment, philosophers in the global North like Immanuel Kant have claimed that it is the destiny of humans to transcend nature, and dominate it by means of the supersensible faculty of reason (Kant). (Though critics like Theodor Adorno, deeply suspicious of the Enlightenment project, argued against the idea of a mind transcending nature. Human subjects, he stated in *Aesthetic Theory*, are not positioned in isolation. In the experience of the sublime, for instance, one senses one’s entanglement with, instead of an apartness from, nature). In the same vein, Watts claimed,

scientists, entrepreneurs, and politicians think they should “conquer” space (1.1.7). It is not surprising that the race for space between the USSR and the USA in the 1950s was one of the prime incentives for creativity research in the global North, and laid the ground for current understandings of the term. This historical base illustrates how deeply misconceived that term is as an ability to find ever-new and useful solutions to challenges that the world poses to human beings. Instead of considering themselves growing out of that world, humans are in perpetual conflict with it. What if one turned the tables and considered human beings as natural *process/es*?

For such a processual view of the self, I turn to the *Abhidharma* (ca 400 BCE–200 CE, literally meaning: *concerning the teachings* or (in another interpretation) *higher teachings*); the ancient Buddhist texts that offer a theoretical account of perception and experience. Many scholars see these texts as the systematic counterpart to Buddhist practices of meditation, evolved as they did out of a core (*mātikās*) of doctrinal concepts listed in charts or diagrams (Jacobs 2017: 1–19). Beth Jacobs accordingly calls this core a “periodic table of experience” (Jacobs 2017: 5). As Monima Cadha explains, the *Abhidharma* teachings offer an account of perception and experience that is different from dominant European and Anglophone meditations on the self and consciousness (Cadha 2016). More precisely, Cadha posits, “the *Abhidharma*-Buddhist writings are replete with attempts to explain the phenomenology of experience in a no-self world,” while non-Buddhist philosophies – and psychologies – precisely start from a self-world (Cadha 223–224). That is to say, the idea of a self that exists as a nexus of consciousness and an anchor to hold on to in a world full of doubt in non-Buddhist, Cartesian thought, is deconstructed as a delusion and a source of suffering in Buddhist thought. No-self means impermanence, self means delusional control.

As there are many different views on (the interpretation of) no-self (*anattā*) among Buddhist philosophers, the idea (or the misapprehension) of what a self might be, is just as open to discussion (Cadha 225, Jacobs, Davis, Rahula). I here maintain that self is not a “quality” or “content”

but rather the “how of experience,” without there being even a minimal self to be presupposed (Cadha 225). Now, if the Abhidharma explains the how or presence of experience in a no-self world, then what does consciousness of experience entail? This cannot be consciousness of a thinking “I”. It is neither *necessary* nor *logical* to presuppose such an I, conceived of as an entity that is continuous over time. First, whatever I perceive in the world, or in thinking, I cannot catch myself in that perception. Second, Abhidharma Buddhist philosophies show one does not need to postulate an “I” as an agent of experience because “causal connections between mental states” make such an ‘I’ superfluous: these states will arise and then disappear anyway (Cadha 238). No need, and no use, to cling to a self that is owning these states as it persists over time (Jacobs 70). Such a self cannot logically exist because no entity can exist permanently in Abhidharma Buddhist philosophies: things originate and are sustained interdependently. Here, everything materializes only impermanently, the mind included. Experience in Buddhist philosophies, then, is not *owned by an agent* because such ownership implies continuity and control. One has no control over the sensations and mental states that arise in consciousness, let alone over consciousness itself. These sensations and states simply come and go (Naht Hanh).

What many European and Anglophone philosophers, psychologists, and cultural critics have therefore taken for an agency that needs healthy reinforcement – the self – is regarded in the Abhidharma as unhealthy identification with the delusion of an internal entity bounded and “separate from the rest of the world” (Cadha 239). For in a Buddhist universe, nothing can be self-same and apart. Everything originates interdependently, in relation to each other, out of each other, and in contrast to each other (Jacobs 18, Rahula 20). Everything – including the self – is part of a web of causations that bring forth temporary constellations. A constellation arises, and then it disappears again: reality is a flow of multiple, momentary, and mutually conditioned events. The self is no less part of that flow than anything else: it is an event that occurs differently, in

different settings, time and again. In the Abhidharma, the self is therefore analyzed as a configuration of *five aggregates* or skandhas: matter, sensations, perceptions, mental formations, and consciousness (Jacobs, Rahula). What is called a self in patriarchal, occidental thinking, is a mere temporary *effect* of particular configurations of the five aggregates in the Abhidharma texts: a mind-body complex that changes with every nano-second in the stream of life. Thus, the first of these aggregates concerns matter or the physical body (*rūpa*). It consists of the four elements (just as the earth consists of these elements) solidity, fluidity, heat, and motion, as well as of the five senses and their objects. The second concerns sensations (*vedanā*), again including the five senses *plus* the sense of the mind (*manas*), which is likewise seen as an organ, albeit one mediating concepts or ideas (Rahula 20–21). The third aggregate concerns perceptions (*sañña*) or the recognition of sensations, just as the fourth includes thoughts, or mental formations/intentions (*sankhāra*), while the fifth refers to consciousness (*viññāṇa*), differing from “Western” conceptions of consciousness to the extent that it is – unlike the first four skandhas – without an object or substrate. Rather, it is awareness-awareness. As these aggregates occur in tandem, so does a self become manifest momentarily. But since these skandhas do not last, that self does not extend beyond their immediate occurring either. Put differently, no self behind the occurrence of the skandhas can be presumed.

Like the process philosopher Alfred North Whitehead, the eighteenth-century philosopher David Hume may have come close to this Buddhist conception of the self as aggregates of matter, sensations, perceptions, thoughts, and awareness-awareness. He pointed out that the self is something we postulate on the basis of the experiences that we have, but this postulation is a fiction: “I may venture to affirm of the rest of mankind, that they are nothing but a bundle or collection of different perceptions, which succeed each other with an inconceivable rapidity, and are in a perpetual flux and movement” (Hume 162, Giles). Beyond these perceptions, there is a vacancy, not an I organizing existence.

Consequently, there is nothing permanent inside us to mark us apart from nature, which is, after all, marked by infinite change. As thus essentially *impermanent*, the five aggregates are likewise *dukkha*, in its third sense of conditioned states, in so far as they lead one to attach to the delusion of a self that is owned, separate, permanent, or continuous (Rahula 19–20).

So far, I have shown how no-self (*anattā*) in Buddhist philosophies is not separate but continuous with nature, that, as such, it is just as impermanent as any other natural process, and that – therefore – there is no ground to postulate an enduring self that is somehow transcendent. To postulate such a self, and to attach to such a self, is one of the prime causes of suffering in human lives. All one has to do is to not-attach for the suffering to end. As emphasized in Zen Buddhism, It will not take a heaven-like *nirvana* to accomplish this feat: *nirvana* can be realized in every moment one can let go of self-attachment. Ironically, as cultures of individuality, “Western” cultures have organized themselves fundamentally around this delusion of an enduring self. It would lead me too far here to enter into the multiple ways in which this organizing has taken place, but one of them, art and creative practice, will suffice to illustrate my point. Research into creative practice and thinking has been predominantly focused on individuals, from historiometric research seeking to understand the productivity of “eminent” (mostly white male) thinkers, musicians, composers, writers, or artists, to traditional research in the humanities on the works of those so-called eminent individuals, their ideas, the spread of their ideas, and copyrights attached to them (Simonton). Theories of distributed creativity (Glaveanu) have countered such self-focused inlets to creative thinking and practice, yet so far, they have not pursued or thought through the consequences of *no-self* to creativity.

Can a creativity beyond the self, a creative practice of no-self be even imagined from within a “Western” framework? Yes, when one thinks of artistic currents such as conceptual art that denounced authority/authorship – developed in

the mid-twentieth century when Tibetan Buddhist and Zen Buddhist ideas started to influence “Western” composers, artists, and poets – or collective creative practices such as quilting that denounce originality and individual genius. At the same time, creativity beyond the self remains a challenge within a “Western” framework: conceptions of art, but also art education, and the production and distribution of art and literature have been defined and organized in such a way as to privilege the idea of a continuous self that evolves over time – a subjectivity expressing itself to others, growing in time, changing, yes, but always as part of a single, overarching personality. Answering to this challenge would involve an idea of creativity beyond *novelty* and *usefulness*: beyond achievement, or perfectible skill (Brillenburger Wurth). It would involve an idea of creativity beyond the human self as agency, and require a theoretical frame that is, by definition, ecocritical: that sees the production of humans (in whatever field, art, or otherwise) as arising out of their entanglement or continuity with nature. If the traditional, individualistic take on creativity is about bringing the new and useful into being, creativity beyond the self is about presence or deep attentiveness to what comes along. It is about freedom, as much as art can be when it releases one from habitual patterns of thought, experience, and perception. For that matter, no distinction between human-made ideas or products, or artifacts found in nature, such as the blossom of a tree, is needed or desired to think about creativity without a self. What matters, perhaps, is the trace of impermanence that such products and artifacts likewise display: a reminder to not-do attachment, to accept change, and live with it.

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Inclusion

Sylvia De Chiaro and Tícia Cassiany Ferro Cavalcante

Federal University of Pernambuco, Recife, Brazil

Abstract

Starting from a dialectical stance in which statements always exist in the condition of an opposite, this text proposes thinking about inclusion considering that it is only understandable in relation to its opposite, exclusion. What makes an individual be excluded in a society can be approached from different points of view. Here, the objective is to reflect about the place of the word as a driver of the individual within the exclusion–inclusion spectrum. As in a dance, individuals move from side to side as the “space of the word” is less allowed or given more opportunity. It is in it, in the word, that a human being realizes and asserts him/herself as a being of identity and author of his/her own history and as a social being, worthy of space and finally of inclusion. It is the word that transports a person from one end of the spectrum to the other. However, we are not talking about any random use of the word here, rather one that allows this movement. The word that does not need sound, but that exudes positioning in the world, that opens space for the constitution of a unique identity in the middle of negotiations of meanings, in an ongoing debate among voices in a universal symposium. The possibility of inclusion is proposed here, therefore, in light of a specific type of language that supports this reflection: that of argumentation. Among the possible cuts of this inclusion–argumentation dyad, in this text the focus of the inclusion axis is people with disabilities.

Keywords

Inclusion · Argumentation · Language · Negotiation of meanings · People with disabilities

This text raises a discussion about the possibility of inclusion through argumentation. The fundamental idea that will permeate the whole construct presented here is that participation in situations of argumentation constitutes a privileged path to enable individuals, who are often socially excluded, to advance towards inclusion. In this exclusion–inclusion spectrum, this peculiar discursive practice that compels individuals to assume and negotiate a position in the world allows them to be seen as people with an identity, most of the time unrecognized. The “space of the word” brought forth by argumentation is seen here, therefore, as a space for the exercise of citizenship and as an important support for inclusion.

Within the perspective presented here, it is possible to approach the inclusion – as broadly as possible – of all people who for various reasons have been placed on the margins of society due to their peculiarity, which at some point deviates from the socially established pattern, silencing them and thus making them invisible. In this text, the framework given to inclusion is that of people with disabilities. That is, the central concern will be to point to argumentation as a possible intentional discursive strategy for the inclusion of these citizens. It is now necessary to bring a historical reflection on how people with disabilities have been segregated and discriminated against and demonstrate how they have played (and still play) precarious modes of social participation (Meletti 2013). Until recently, people with disabilities experienced a long history of invisibility and segregation (Kassar 2013; Mazzota 2005; Guebert 2007; Junkes 2006).

Historical Review

The process of social exclusion that still prevails today is historic. In Europe, in the eighteenth and nineteenth centuries, theories of heredity of intellectual disability and human degeneration contributed to an intense process of institutionalization of people with disabilities. In this scenario, the concern in identifying the “normal” and “abnormal” in medical-pedagogical science grew in several

countries, hierarchizing humanity and denoting the presence since days of old of the dialectical logic (see chapter ► “[Dialectics](#)”) of thinking about reality from its contradictions, including all the tension that determine them.

The processes of medicalization and pathologization of people were configured within a proposal of indiscriminate institutionalization, by categories of disability, which began to occur in the nineteenth century. In 1905, the contribution of the intelligence scale, according to mental age, contributed significantly to this process (Kassar 2013). The work of Binet and Simon in the French government emerged, enabling the measurement of the intelligence of all children in order to separate the “normal” students from the “abnormal” ones, with the justification that it would benefit the schooling process. It is not difficult to imagine that in these different and hierarchical environments, conceived within this range of opposites, the “space of the word” turns cloudy until it reaches invisibility in the environments destined for the “abnormal.”

For a long time, we lived in a society in which the ideological standard of normality prevailed. In this sense, the person with a disability had a condition that kept them away from the modes and functions seen as “normal.” This duality between “normality” and “abnormality,” marked among other aspects by the different usage possibilities of the word, is largely responsible for the processes of discrimination, segregation, and exclusion of people with disabilities that still prevail in our society. For them, the word, as a representation of what is possible toward a personal and social position, reflects a change in the long history of human disqualification. For Meletti (2013), because the strange and the unknown constitute a threat, they ended up being configured in interactions laden with prejudices and stereotypes that established attitudinal barriers. In this context, disability, in the sense of pathologization, was seen as the only attribute of the human being, constituting a social burden of disadvantage and discredit and yielding to those inserted in the category “disability,” the silencing of their voices. Thus, there was a homogenizing perspective in which a person was not allowed to be seen as a

whole, nor in his/her own personal and social identity. The capitalist mode of production is a great ally of social exclusion, and in our society there is an exclusion–inclusion duality, as if they were constitutive parts of the same process, submerged in a social plot that sustains its interdependence (Kassar and Rebelo 2018). We live in a society with inhumane modes of social participation, which places some people at a secondary level, while valorizing an idealized standardization. In the 1970s, based on the cost–benefit ratio, the theory of human capital started to be used in special education, bringing about a new direction of educational policies in several countries, with the prerogative that people, when treated, can become useful and contribute to society. The idea was “to teach people with disabilities to live as normal a life as possible.”

In order for there to be a change in this exclusion/institutionalization paradigm, responsible for reducing the possibility of participation and therefore, of inclusion, some important movements took place worldwide, such as the Education for All conference, in Jomtien, Thailand, in 1990, which defended, in its Article 3, a look at the basic learning needs of people with disability. Another important movement was the Declaration of Salamanca, in 1994, which focused on the dissemination of the concept of inclusive education, a landmark for the inclusion of people with disabilities. The most recent international document is the UN Convention on the Rights of Persons with Disabilities, adopted in 2006, with numerous countries as signatories, addressing important aspects for the social inclusion of people with disabilities.

This inclusive scenario tries to accommodate the different ways of learning and breaks with the logic of normalization and the production of capacitism (Bock et al. 2018). School inclusion is a movement that aims to guarantee everyone’s right “to be a person,” as a possibility that has been historically denied, without demanding homogenizing modes of doing and signifying. Nevertheless, there is no consensus on the practices for schooling these people.

In this scenario, some proposals emerge, such as the field of Disability Studies in Education,

which has focused on educational spaces that are more welcoming to human functional variation. There are also proposals that think about inclusion configured in the idea of schooling for all, considering the different ways of learning, with an appropriate curriculum for the various skills of students, taking into account that people with the same disability have different needs in their schooling (Bock et al. 2018). In this line of thinking, a recent approach is the Universal Design for Learning (UDL), which eliminates methodological barriers in the learning contexts and expands choice possibilities. This proposal breaks with the idea of having one plan for the whole class and another plan for students with disabilities, so that people with different challenges can have different possibilities. It does not normalize students, but it does allow them to find their own way of participating. For Katz (2013), the UDL is an instructional approach that promotes access, participation, and progress for all students in the curriculum. Thus, it recognizes the need to create different learning opportunities and therefore different participation possibilities in a single curriculum. The principle of schooling focused here for people with disabilities is the learning of all students, with disabilities and without disabilities, with responsive educational actions, considering variability in the way of learning, since disability is a human condition (Bock et al. 2018). In this perspective, the idea is to customize the learning of all students, to offer the opportunity to construct what is possible regarding inclusion as a right of all human beings.

Cha and Ahn (2014) also mention the effectiveness of UDL, when addressing the use of tools/artifacts in inclusive classes, inspired by historical-cultural theory. The authors address the importance of cultural artifacts (physical or abstract) and of systematic tensions for learning. Historical-cultural theory, with Vygotsky (see chapter ► “The Possible in the Life and Work of Lev Vygotsky”) as one of its main representatives, brings important substance for thinking about the learning process and the development of students with disabilities. The centrality of this author’s theory lies in the understanding of language as a symbolic (abstract) cultural artifact, as

constitutive of the human being, of his/her inner world, as an instrument of thought (Vygotsky 1993, 2001).

The Centrality of Language in the Constitution of Humankind

In criticizing the medical model of disability, which pathologizes the subject with disabilities, Vygotsky (1997) brings subsidies to build a path for what is possible with regards to inclusion. For this, the intention here is to have a wide discussion on the concepts of primary disability (organic impairment), secondary disability (social conditions), and social compensation processes as the only scientifically valid path for the learning and development of people with disabilities, and the emphatic defense that these can occur through language and internalization processes. In this paradigm, mediation is a central point and its focus is on the presence of cultural artifacts – mainly language – as elements that bring complexity to the relationships between the organism and the environment, allowing individuals to internalize and elaborate meanings, and build their own representations of the world. For this author (Vygotsky 1997), a primary (biological) disability modifies the relationship between a human being and the world, but the laws of development will be the same for anyone, with or without disabilities. What will differ is the path of insertion of the subject in the world, the people with disabilities traversing different pathways, translating into the different possibilities of inclusion. He mentions that from a psychological and pedagogical point of view, the conduct of the person with a disability can be completely equated with that of the nondisabled.

An important question that can be related to the concepts of primary/biological deficiency and secondary/social deficiency (Vygotsky 1997) is the reference from historical-cultural theory about the development of the human baby when compared to other nonhuman animals. Pino (2005), corroborating Vygotsky's position, when addressing the evolutionary advantage of Homo sapiens, mentions that what distinguishes human

beings from other animals are the superior psychological functions, of a cultural nature, particularly language. The fact that the human baby needs to be cared for reinforces the role of the cultural experience in "becoming a human being" (Pino 2005, p. 46). In relation to this point, the development of human beings with and without disabilities goes beyond the biological dimension and occurs at the cultural level, differing greatly from other animals. Thus, from a psychological and educational point of view, the sociocultural development of children with disabilities cannot be denied when subjected to spaces and activities that do not affect higher psychological functions. All people need to be inserted in the human environment, with all the implications of this insertion, which points to the idea of the possible with regards to inclusion even when exclusion emerges from human culture itself.

Pino (2005) takes up the Vygotskian idea that there is a kind of transposition from the collective/cultural experience to the individual experience, which occurs through mediation and which is in the order of meaning. Thus, language plays a central role in the internalization process, and in this sense it gains the status of an instrument of thought. In this relationship between thought and language, the child goes from a phase in which the language is purely emotional to an objective language (with communicative intentionality). Vygotsky (2001) argues that "language is not only a means of expressive-emotional articulation, but also a means of psychological contact with similars" (p. 127). Allowing people with disabilities to access forms of abstraction from an early age is to allow them to develop meaning and insertion into culture, even if they use other forms of language besides speech. Although it may already be understood at this point in the text, it is necessary to point out clearly that the terms "speech," "word," and "voice" hereby utilized dispense at all times of any need of association with sound, as they are meant to be understood within a much broader idea of language, one that gives meaning to the human being in his/her communication with the world, whatever its peculiarity. A person communicates with the world from sound language, and also

with the language of gesture, drawing, and looking. Hence, “the space of the word” here is the space granted for individuals to constitute themselves in an intersubjective manner, in all its idiosyncrasy, as individuals and citizens. Moreover, the main thesis defended here is that there is a privileged discursive space in which this movement of the intersubjective constitution of the individual and his/her social inclusion happens: the discursive space of argumentation.

The Possible of Inclusion By Way of Argumentation

The whole concept of Vygotskian language presented here is precisely what supports the idea of the possible, proposed in this text. When language is understood as part of the psychological makeup of a human being, from an internalization process that takes place within a space of intersubjectivity, the importance of the “space of the word” is defended as a means for the participation, transformation, construction, and affirmation of identity, empowerment, and, consequently, the exercise of citizenship and social inclusion of the disabled person. However, among the countless possible discursive organizations, this text proposes that it is the discursive organization of argumentation itself that is the privileged locus of discourse where inclusion is enabled. The historical review presented here on the relationship of humanity with the issue of disability denoted the silencing of these individuals, the restriction of their voice spaces, the barriers imposed on them in their formation as individuals and citizens, and, consequently, their exclusion. Thus, the intention here is to clarify the direction this argumentation can take, as a path to rescue this “space of the word” for these people, and as a process of social compensation that drives the movement of inclusion.

Among the different perspectives from which argumentation can be observed according to their philosophical affiliations, the understanding here is of a discursive activity that is unveiled when at a given moment, in response or in anticipation of an opinion, a different opinion is constructed, and

from a dialogical course (see chapter ► “[Dialogism](#)”) both sides try to justify their positions, seeking to make them increasingly acceptable to their interlocutor (van Eemeren et al. 1996; van Eemeren et al. 2014). The dialogic term used here goes beyond the understanding of dialogue most used in the common sense to refer to interactional communication between people in a synchronous way in time and space. Here, dialogic refers to Bakhtinian dialogism (see chapter ► “[The Possible in the Life and Work of Mikhail M. Bakhtin](#)”). Bakhtin (2005) understands dialogical relations from beyond their face-to-face interaction, as a dialogue among different voices in a universal symposium, which may have been constituted at different times and spaces, not necessarily synchronous, but which bring multiple perspectives that intertwine and respond to each other. In this sense, it is possible to understand that the existence of a dialogue does not require the presence of two or more people, which can happen, for example, within a single statement as long as it is possible to recognize different perspectives in a symposium of voices that diverge dialogically. And within this perspective, any statement emerges from a social context of meanings and values, portraying the dialogical subjects are constituted by sociocultural voices that make them historical and social beings, but also particular and unique, since even in the assimilation of other voices, the dialogic subject, never passive, re-signifies them, accentuating their “saying” in a unique manner (Bakhtin and Voloshinov 1995). According to Cavalcante (2017), from this understanding of the dialogical subject, the person with disabilities is also constituted within this relationship between historicity and singularity. For the author: “It is in this social place that, it is believed, all people must constitute themselves” (p. 429).

The importance of this understanding of dialogue, which is at the basis of the argumentation perspective proposed here as a possible path for social inclusion of people with disabilities, is that it authorizes the perception of the responsive character the subject assumes in a situation of argumentative dialogue, whether he/she is with an interlocutor present synchronously or simply assumed. The focus of attention falls on the fact

that, for those who practice it, argumentation provides opportunities – alone from his/her dialogue of inner voices, or collectively, constantly led to and immersed in a specific historical and cultural context – to position themselves and build their perceptions about the world, defending them in face of the possible presence of different perspectives. This movement, therefore, contributes for individuals to build their personal identities and assert them in their social space. For those who carry a history of marked silences, as is the case with people with disabilities, the encouragement to engage in dialogue in which their position in the world is not only enabled but requested and stimulated appears as an alternative of social compensation that envisions constituting an interesting path to the achievement of citizenship and inclusion. Thus, this constitutes a possible path for the empowerment of these people, due to the great potential for transformation that it holds regarding equality of conditions, allowing them to exercise power over themselves and over their social condition.

The peculiarity of the argumentative dialogue that makes it significant in this sense can be more clearly perceived when looking at the two movements highlighted by Leitão (2000, 2011), which specify and define argumentation, namely: the justification and the negotiation of meanings. When an individual is asked to take a stand on a subject, a point of view is constructed and proposed by him/her and one or more justifications are usually added. These may come spontaneously or be demanded by the interlocutors (present or imagined). The justification, according to the author, demands from this proponent a movement to think about the bases that support his/her thinking on the subject in question, in order to make his/her point of view more acceptable. Similarly, this thinking about your own thoughts also occurs when an opponent demands (in person or when an opposition voice is anticipated) an answer to your different position on the same question. At this point, the proponent is also led to put his/her own thoughts under review and reflect this time on the limits that surround his/her position. This critical and reflective movement provides the opportunity for a new discursive

construction that will have an impact on this individual's thinking on the issue.

Two points are important to highlight. The first is that in both cases the individual was led from a cognitive functioning, in which the central focus was to think about the subject in question, to a metacognitive and self-regulating functioning, in which the focus became his/her own thoughts about the subject in question, which allows us to denote the potential of this discursive activity in developing reasoning skills. The second point is that within the dialogical dimension that defines the argumentation assumed here, proponent and opponent can exist in the same person as voices that negotiate intrapsychologically, for example, a simple decision of someone's day-to-day life, without the need of emitting any one sound. This directly affects the possibility of using argumentation with people with different types of disabilities, since it can occur at very different levels of depth, from day-to-day topics to scientific questions – and also in the most varied forms, verbalized or not, using writing or not, involving movements or not, and even in the most different configurations in tasks performed by an individual alone, in pairs, or in groups. In all cases, what is defended here is that this argumentative function will be helping the individual to constitute himself as a person in the world, with opinions, positions, identity, and helping him/her to advance in this spectrum from exclusion to inclusion.

Two studies deserve to be cited as examples of the scope that the use of argumentation with people with disabilities can have. In Cavalcante and De Chiaro (2011), the authors bring contributions to the reflection on the process of school inclusion of students with Down syndrome. This study shows how the argumentative discourse in the classroom can encourage and impel communicative movements and favor the construction of knowledge of a child with Down syndrome, in participation with the other students without disabilities in the third year of elementary school. Pereira's study (2017) aimed to analyze the contributions of argumentation in the teaching of Chemistry, in a class on radioactivity, with deaf students who use Libras (Brazilian sign language). The results showed signs of skills

development in understanding the content and in recognizing the ethical and moral limits in dealing with radioactivity by deaf students. In both cases, the activities took place from the emergence of situations of argumentation mediated by the argumentative discursive actions intentionally implemented by the teachers (De Chiaro and Leitão 2005; Leitão 2011).

It is necessary to highlight that to have argumentation here as the possible of the inclusion process meant drawing attention to something that precedes the consideration of its potential, for the construction of critical and reflective knowledge and the development of reasoning skills. Just as important, especially when referring to people with disabilities, is the impact argumentation has on the constitution of personal identities and the acquisition of social space, providing that this exclusion–inclusion tension can be interpreted within the idea of a possible overcoming, via argumentation.

Conclusion

To what extent the “space of the word” can become an instrument of social exclusion or inclusion is raised here from a reflection on how a discursive organization, which has the peculiarity of taking those who exercise it to an inevitable position in the world, can become a fruitful path towards inclusion. The idea of argumentation as the possible of inclusion is based on its dialogical dimension in which the individual is constituted in an intersubjective manner, that is, one sees and recognizes oneself through the other, whether real or imaginary. Within this perspective, when arguing, there is a multiplicity of voices to which the individual projects him/herself in such a way that one cannot think of a self alone, because whether or not one is physically with someone, there is always a multiplicity of voices with whom one dialogues, constituting oneself as a historical and unique being. The responsive character of the argumentation itself gives the opportunity for this historical and unique individual to position him/herself, to assert him/herself as a person who is a citizen and thus moves towards social inclusion. The more specific

intention of placing people with disabilities as the focus of these reflections was to point out how individuals with a history of silencing of their voices, of restriction of their speech spaces and who live to this day in a constant struggle to be recognized as individuals and citizens, can find in argumentation a possible path for the participation, transformation, and empowerment toward social inclusion. Inserting people with disabilities in social spaces does not guarantee that they are, in fact, included, since inclusion depends not on the order of physical space but the symbolic, the subjective. Physical presence, when not well mediated, can mean the creation of an apparent atmosphere of inclusion that, on the contrary, accentuates exclusion. For this reason, this text defends the importance of thinking about the inclusion of people with disabilities beyond the physical space, in the “space of the word,” proposing finally that the place of symbolic affirmation created by argumentation can compensate for what the physical place does not ensure.

Cross-References

- [Dialectics](#)
- [Dialogism](#)
- [The Possible in the Life and Work of Lev Vygotsky](#)
- [The Possible in the Life and Work of Mikhail M. Bakhtin](#)

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Innovation

Lionel Artige

University of Liège, Liège, Belgium

Abstract

Innovation is the human capacity to give an idea the power to change the course of events and to push back the frontiers of the possible. If innovation is nowadays praised in the West and even beyond, it has long had a negative connotation in a semantic field limited to politics and religion. It is with the Enlightenment and the faith in the progress of the human condition that innovation, instrument of disruptive change, takes on a positive meaning. Its semantic field then widens to other domains such as science, arts or society before the word “innovation” becomes an essential concept in economics, the creative force that the economic system generates and that transforms it. This belated confidence in the beneficial effects of innovation may have reached its limits with the ecological crisis.

Keywords

Creative destruction · Creativity · Innovation · Possible · Transformative creation

According to a quote attributed to the French poet Paul Éluard, “un autre monde est possible, mais il est dans celui-ci.” [Another world is possible, but it is in this one.] The human imagination may have no boundaries, but our physical world is finite.

Innovation is this human capacity to give an idea the power to change the course of events and to push back the frontiers of the possible at the risk that this power spins out of control and ends up annihilating everything. If the spirit of innovation is nowadays acclaimed and promoted in all Western societies and even beyond, this spirit has long been considered throughout history as harmful or even dangerous. This belated confidence in the beneficial effects of innovation may have reached its limits with the ecological crisis.

Definition Through History

Changing the status quo involves an uncertainty that can provoke two reactions: hope and fear. Hope that a better future is possible or fear of losing the stability of a known present. Innovation as the introduction of novelty into the status quo can have a negative meaning when tradition and stability are highly valued and can have a positive meaning when people are confident in their ability to think and act to change the world for the better. Historically, the word “innovation” shifted from a negative to a positive meaning during the scientific, political, and industrial revolutions when elites and people became convinced that tradition was the obstacle to progress.

Etymologically, the word “innovation” goes back to the Greek word *kainotomia* (from *kainos*: new) which becomes in Latin *innovatus*, past participle of *innovare*, itself derived from the Latin word *novus* which means “new.” *Innovare* means “to introduce something new,” “to modify,” “to renew,” or “to restore” (Oxford Latin Dictionary; Godin and Lucier 2012). The etymology tends to suggest that innovation is the origin of something or the return to that origin.

Based on a careful reading of numerous texts, Godin (2015) traces the history of the word “innovation” and its meanings from Antiquity to the present day. He observes that the word has a predominantly negative meaning from Antiquity until the eighteenth century and that it is used exclusively in the political and religious domains. In Ancient Greece, innovation (*kainotomia*) is seen as a change initiated by humans that disrupts the divine and natural order of things. For

Aristotle, for example, innovators are people who seek to change the political order for private ends. Innovation is therefore political and subversive. It threatens the stability of the political order. Laws can be changed, of course, but carefully and gradually, whereas *kainotomia* is a disruptive change often translated as “revolution.” This political and subversive connotation can be found in Ancient Rome, where the stability of the political order remains a social goal. But when Christianity becomes the official religion of the Roman Empire in the fourth century, innovation (*innovo*) also takes on a religious connotation and describes the spiritual renewing to which Christians are called in order to rid themselves of their old corrupted nature and to transform themselves into new people created in the image of God. Thus, innovation as a spiritual and moral renewing acquired a positive meaning that it would retain until the Protestant Reformation. In the England of the sixteenth and seventeenth centuries, innovation recovers its subversive and pejorative connotation from Antiquity. Protestants and Papists accuse each other of being “innovators.” The Catholics consider the Protestants as heretics because their innovations lead to the creation of a new church. The Protestants retort that they want to create a reformed church in order to return to the original church, which the Catholics, by their innovations, have corrupted. Religious doctrinal innovation represented such a religious and political threat that in 1548 Edward VI, King of England, issued *A Proclamation Against Those that Doeth Innovate* and threatened the innovators with “*imprisonment, and other grievous punishments*.” In 1626, King Charles I reiterated the prohibition of innovation. But who was concerned by this prohibition? For the Protestants, the Papists were guilty of having innovated since the origins of Christianity. For the Papists, the Protestants were guilty of having innovated since the Reformation. For the Puritans, the English Protestants were guilty of having kept certain Catholic innovations in the Reformed Church. Finally, everyone was an innovator! This is the logical impasse that Bentham (1824, p. 144) will later point out: “Whatever is now *establishment* was once innovation.” King Charles I was also accused of innovating in

religious and political matters. From the seventeenth to the nineteenth century, the established order in science and politics wavers. The past is less venerated and even contested while the future gives a glimpse of hope for progress. The revolutionaries are accused of being innovators by the supporters of the established order, but the state of mind in Europe begins to shift toward a spirit of innovation. Gradually, innovation ceases to be a source of fear and becomes an instrument of progress of the human condition.

From the Word to the Concept

In the nineteenth century, innovation becomes a virtue in the name of faith in scientific progress and its expected positive effects on living conditions (Godin 2015). The word “innovation” is no longer confined to politics and religion but extends its semantic field to the scientific, artistic, and social domains. Innovation is then both the introduction of a novelty in all these domains and the consequences (change) resulting from this novelty which can be an invention or more broadly a creative idea. Innovation is “iconoclast, divergent, revolutionary thinking” (Kuhn 1959) and the change resulting from innovation has an economic value which increased with the takeoff of economic growth in Europe following the Industrial Revolution. An invention or creative idea can exist without having a market value. Not innovation, which always has economic consequences. It is because change has economic implications that innovation has an inescapable economic dimension. With economic growth, this economic dimension will become central in the twentieth century and even reduce the meaning of innovation to its sole economic dimension. An invention or a creative idea that is not introduced to the market is not an innovation. The novelty becomes an innovation as soon as it acquires a market value and modifies the available supply on the market. This is the meaning that the twentieth century gives to innovation. Of course, the term “innovation” continues to be used in other fields than the economy but always followed by the adjective designating the field:

technological, artistic, political, or social innovation. When the term is used alone, it is an economic concept.

In the scientific literature and the media after the Second World War, innovation often has a technological dimension. But for the last two or three decades, undoubtedly influenced by the rise of the concept of “creativity” in psychology and then in economics, the concept of innovation has broadened its semantic field to mean the commercialization of any creative idea (Artige and Lubart 2020). A representative definition of innovation in contemporary economic literature is as follows:

Innovation can be defined as the application of new ideas to the products, processes, or other aspects of the activities of a firm that lead to increased “value”. (Greenhalgh and Rogers (2010), p. 4)

This “value” is defined in a broad sense to include the higher value added gained by the innovative firm but also the benefits to consumers (higher utility) or to the firms that buy the innovation (higher value added). All economic agents – households, firms, NGOs and public administrations – can introduce innovations. Nevertheless, from the point of view of economic change induced by innovations, it is the innovations made by firms that have the greatest impact.

Innovation: The Engine of Economic Development

Innovation is widely regarded by contemporary economists as the main driver of growth in living standards. This has not always been the case. It was not until the first half of the twentieth century and the pioneering writings of the Austrian-born American economist Joseph Schumpeter that innovation was considered a central economic concept in economics. Although he was a professor at Harvard University from 1932 until his death in 1950, Schumpeter’s work was long labeled as heterodox by his peers and therefore had limited influence on mainstream economics until recently. This was not the right time for his work to attract interest. His contemporaries were preoccupied with the traumas of the crisis of the 1930s and the Second World War. Keynesian

demand-side solutions met the expectations of economists and governments seeking to pull Western economies out of the economic slump, thus overshadowing the Schumpeterian supply-side analyses of capitalism. The work of Robert Solow (1956, 1957) at the end of the 1950s, which highlighted the role of technological progress in economic growth, led to a reorientation of research toward innovation and, consequently, toward the pioneering work of Schumpeter. The supply-side economic crisis of the 1970s and the ensuing decline in productivity in Western countries accentuated this scientific shift and allowed the Schumpeterian approach to enter the mainstream of economics (Giersch 1984) and to inspire the first Schumpeterian growth models (Aghion and Howitt 1992; Klette and Kortum 2004).

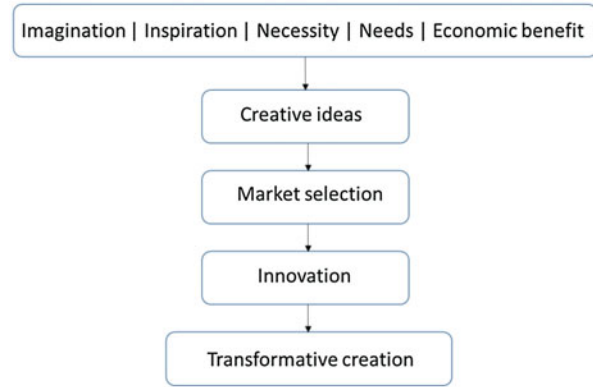
Schumpeter praised the systemic approach used by Léon Walras, the father of the neoclassical theory of general market equilibrium, whose objective was to determine the equilibrium conditions for the allocation of scarce resources in perfectly competitive markets. However, no doubt influenced by the more historical approaches of Adam Smith or Karl Marx, he considered that the market mechanics of the neoclassicals completely missed the point of how market economies work. While he recognized that price competition between firms leads to an efficient market equilibrium, he stressed that this equilibrium was static and efficiency was limited to the short run. However, observation of the history of Western economies since the Industrial Revolution shows that the characteristic of market economies is their incessant dynamics of change. There is, Schumpeter argues, a “source of energy within the economic system” that deviates it from its static equilibrium of perfect competition (Schumpeter 1937). This “source of energy” is none other than innovation. Driven by a profit objective, firms compete not only by price but also by innovations that distinguish them from their competitors and allow them to reap temporary monopoly rents (deviations from perfect competition), that is, the entrepreneur’s profit. Neither neoclassical, nor Marxist, nor Keynesian, but inspired by many, Schumpeter proposed, at a time when the market economy was experiencing

its deepest depression, an original theory of economic development where innovations sacrifice short-term static efficiency (the profit from the innovation is a loss for the consumer but an income that finances the innovator’s research and development costs) to create long-term economic growth (innovations create productivity gains that raise material living standards).

Transformative Creation Rather than “Creative Destruction”

Economic development fueled by innovation-based competition is not a smooth evolutionary process. Schumpeter (1942) calls this process “*creative destruction*.” Innovations create new activities and jobs but also destroy existing activities and jobs. As the budget of consumers is limited, there is no room for all firms (existing and new) on the markets. This is why innovative firms that gain market share drive those that are not innovative enough out of business. In other words, innovations create winners and losers: firms are born and others go bankrupt; workers find or change jobs and others lose theirs. At the macroeconomic level, innovations have a positive net social effect if and only if the value created by the innovations outweighs the value destroyed. Competitive pressure ensures that this is the case, since firms that survive competition are necessarily more profitable than firms that disappear. This cycle of creation and destruction of activities is a process of selection of the firms best able to respond to demand or to generate it. The innovations brought about by these firms make it possible to create a long-term growth process accompanied by structural change due to the different growth rates across sectors of activity. It is not the random effect of multiple external causes but the economic system itself that “generates the force that incessantly transforms it” (Schumpeter 1937). This dynamic economic process makes it clear that the concept of “*creative destruction*” is a misnomer. The destruction of activities does not create new ones. It is the creation of activities that both creates and destroys value and leads to the transformation of the supply of goods and services over time. At the origin of this process, there are creative ideas that penetrate markets and disrupt

Innovation, Fig. 1 The genealogy of innovation



the existing supply and demand by proposing a competitive innovative supply. By constantly stimulating demand, innovations put pressure on the existing supply, which is forced to innovate in turn or exit the market. This incessant pressure contributes to both a quantitative increase in the value created and a qualitative change in what is produced and sold in the economy. The successive waves of innovation thus generate a process of *transformative creation* of the economy (Fig. 1).

The Existence Conditions of Innovation

The process of transformative creation is based on the production of creative ideas, some of which will become innovations introduced on the market. The production of these ideas and the development of innovations have an economic cost that the innovator is willing to pay if the profit she can expect covers at least this cost. However, this is not guaranteed for several reasons. First, the search for a creative idea is an uncertain process that often requires a research expenditure. If the search is successful, the creative idea can lead to two opposite economic situations. If the author of the creative idea manages to keep it secret, she can incur expenses to develop an innovation that she alone will be able to supply on the market. This situation is the best for the innovator since the monopoly allows her to set the price at a level sufficient to refund the cost of research and

development of her innovation. The opposite situation occurs if the creative idea is publicly disclosed for some reason. Once public, the creative idea is a public good, that is, it is a nonrival good (many people can use the idea at the same time) and a non-excludable good (it is difficult to prevent others from using the idea). When the creative idea becomes public, its author loses the monopoly on it and, most likely, on the innovation that will be supplied on the market. The more people who sell the innovation, the lower the market price and the lower the profit. Of all the sellers, it is the author of the creative idea who loses out, since it was she who financed the initial research. Arrow (1962) argues that the disclosure risk borne by the innovator discourages innovation and leads to a suboptimal production of creative ideas. In a market economy, the optimal consumption and the optimal production of an innovation resulting from a creative idea are incompatible. The optimal consumption of the innovation requires the lowest possible price, that is, a price equal to its marginal production cost (zero profit), which would result in a loss for the innovator (the profit does not cover the research and development costs). The optimal production of the innovation requires a profit high enough to cover the initial research and development costs, which is possible if the creative idea is not made public. In this case, the innovator can sell her innovation at a monopoly price, that is, at a price higher than the marginal

production cost. While this price is optimal for the producer of the innovation, it is not optimal for the consumer. This incompatibility is what economists call a market failure. If the author of a creative idea (e.g., a new vaccine) cannot appropriate the economic benefit of her idea because of its public disclosure, then she has no economic incentive to seek and develop a creative idea and then an innovation. Conversely, if the author of a creative idea (the new vaccine) has exclusive ownership forever of the economic benefit of her innovation, then the monopoly price will restrict access to the new vaccine, and the exclusive ownership of the idea will prevent others from using it to create new ones. Creative ideas grow out of each other. It is therefore useful that they can spread and be used by others. In order to solve this dilemma, the institutional solution that has been found, at least in Western societies, grants legal protection (patents, copyrights, etc.) to the creators of ideas and, in exchange for the public disclosure of the ideas, requires producers who would like to use them to pay royalties to the authors. This solution aims at combining the creation of guaranteed rewards for the production of creative ideas and their wide dissemination for optimal use. The system is not perfect, but it does break the trap of market incentives for creative ideas. It also highlights that the innovation-based economic development requires a sound institutional architecture and respect for rights such as intellectual property rights.

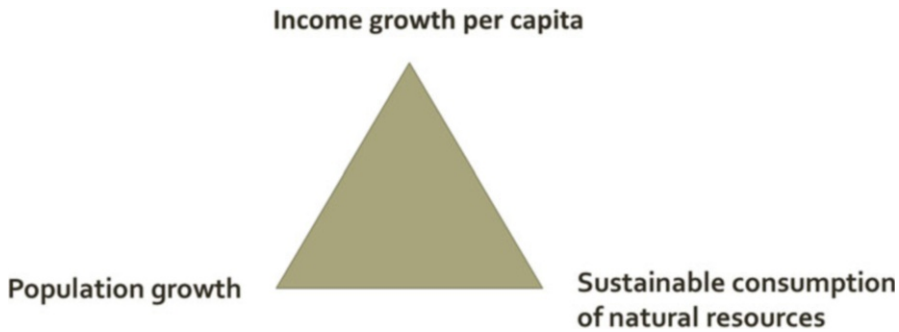
Innovation and the Possible

Figure 1 represents the genealogy of innovation from its human brain origin to its macroeconomic effects. Creative ideas can be stimulated by necessity (finding the vaccine for a pandemic; adapting to climate change), needs or desires, (intentional) imagination, unintentional inspiration from life experiences or knowledge, potential economic benefit, or a combination of these different stimuli. Ideas are not made, they come to our mind. A creative idea is thinking about something that does not exist and that begins to exist (the abstract

possible). Once expressed, creative ideas are added to the existing stock of knowledge and push back the (a priori infinite) limits of the abstract possible. Freedom of thought, the stock of knowledge, a creativity-friendly culture, technologies for the dissemination of ideas, and potential economic benefits can explain the quantity but also the quality of creative ideas expressed and thus made public. Some of these creative ideas may be in demand from individuals and firms, creating a market and selling prices. Then, they may turn into innovations (the real possible) and feed the transformative creation process. As soon as human creativity is unleashed or even promoted, the abstract possible generates the real possible under the constraints of feasibility, physical and financial resources, and consumer demand. The question is then: does the real possible accomplish the progress of the human condition promised by the Enlightenment? In a democratic market economy, the economic system is decentralized: the real possible is the aggregation of a multitude of decisions made by individuals free to think, create, and innovate. There is therefore no central command to set its destination, control its trajectory, and modulate its speed of evolution. However, the finitude of Earth does not guarantee the sustainability of any real possible. Figure 2 characterizes the trilemma facing the humankind: unlimited growth in income per capita and in population is incompatible with the limited amount of exhaustible natural resources essential to life. Therefore, the trajectory of our real possible that originated at the time of the Industrial Revolution is unsustainable. The humankind has been slow to become aware of this sustainability constraint. We can only hope that this constraint inspires the abstract possible in order to redirect the real possible in time.

Conclusion

Innovation is today an economic concept and a state of mind that is praised at least in Western societies. Until the eighteenth century, the semantic field was restricted to the political and religious fields and its



Innovation, Fig. 2 The trilemma of humankind. (Per capita income growth, population growth, and sustainable consumption of natural resources may be three desirable goals for a society. Unfortunately, these three goals are not achievable simultaneously. Society must therefore make a choice by eliminating one of these three goals. The goal

that humankind is currently sacrificing is the sustainable consumption of natural resources for the other two. Given the environmental disruption that unreasonable consumption of these natural resources causes, this choice leads to a dead end in the medium or long term for life on earth.)

connotation was negative. The change took place with the Enlightenment and the new faith in the progress of the human condition. Innovation then became the instrument of disruptive change in the political, scientific, artistic, and social fields. The economic growth resulting from industrial change during the nineteenth century highlighted the economic effects of innovation, which became one of the fundamental concepts of economics in the twentieth century. At the origin of innovation is creativity, a human ability to push back the limits of the possible. This force capable of transforming the economic system and the condition of humanity is little controlled in a decentralized market economy. The current trajectory of this force is physically unsustainable and therefore poses a risk to the future of humanity. It is up to mankind to prove that in this world, another is indeed possible.

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Insight

Frédéric Vallée-Tourangeau¹ and
Gaëlle Vallée-Tourangeau²

¹Department of Psychology, Kingston University,
Kingston-upon-Thames, UK

²Department of Management, Kingston
University, Kingston-upon-Thames, UK

Abstract

Insight is a form of comprehension that results in the connection between two hitherto unappreciated, unacknowledged, or simply unknown ideas and, consequently, expands the realm of the possible. Making these connections is a powerful driver of creativity and innovation. As a putative cognitive process, insight has exercised psychological researchers for over 100 years. Efforts to capture insight under laboratory conditions are constrained by exigencies of operationalization and control, as well as by an implicit ontological position that casts insight as a property of the brain. As a result, psychological research has focused on what we term second-order problem-solving, which is reasoning triggered by problems presented as propositions that describe states of the world. People are tasked with finding new connections among the problem elements, but these connections can only be made by manipulating a mental representation of the problem. Creative cognition outside the psychologist's laboratory involves a great deal of interaction with the world. In contrast to second-order problem-solving, first-order problem-solving characterizes activities of embodied agents as they interact and manipulate the world around them. Creativity and insight emerge through a transactional process of transformation: physical features cue actions that change both the reasoner and the physical environment in which he or she is embedded. Insightful new possibles are realized through an active and mutually transforming exploration of the problem-solving environment. We discuss insight as an enacted process, involving action and perception. As a physical and perceptual

activity, a degree of serendipity is inevitable, and, in some circumstances, insight becomes "outsight." We identify eight key features of first-order creative cognition that map out a new program of research on insight.

Keywords

Creative cognition · First-order problem-solving · Interactivism · Systemic thinking · Material engagement

Insight, as the word and its etymological origins suggest, is a form of inner sight. There is an interesting tension in the juxtaposition of inner and sight: it is something that happens within a private and subjective world, yet it involves "seeing," a perceptual activity aimed at the outer physical environment, rather than the inner, psychological one. There is something quite interesting about the embodiment of many metaphorical expressions (Gibbs Jr. et al. 2004), and we will return to this perceptual element of insight (and suggest a new twist on an old term).

Insight is a form of comprehension that results in the connection between two hitherto unappreciated, unacknowledged, or simply unknown ideas. Insight is thus a form of creativity, a type of discovery of a new possible. The insightful understanding can be expressed as a new proposition and hence can be assigned a truth-value (Bickhard 2009). The phenomenological signature of this type of inference (Bowden and Grunewald 2018) and its coordinates of occurrence (Ovington et al. 2015) have led to the following observations: Insight can be sudden, it can be accompanied by a positive emotion, and it is sometimes experienced in prosaic quotidian activities (e.g., while bathing). These features have encouraged some researchers to conceive insight as a phenomenon largely driven by unconscious processes. For example, Ohlsson (e.g., Ohlsson 2018) conjectures that patterns of activation in semantic memory may result in the connection among disparate elements; when these associative connections reach a certain level of activation, they become consciously accessible, and a new idea is born.

Historical and retrospective accounts often cast the experience of insight as a pivotal moment in problem-solving, a consequential inflection point in conceptualization that ushers in a significant breakthrough in design, science, and art. Weisberg (2010, 2018) reviewed a number of these moments, including Frank Lloyd Wright's design of Fallingwater, Wilkins's invention of radar, and da Vinci's design for the aerial screw. Whether these moments actually resulted from an experience of insight, with a distinctive phenomenological signature and unconscious origin, is debatable. The debate is partly fueled by the unreliability and circumstantial character of these historical reconstructions and by plausible alternative explanations in terms of deliberate analysis and analogical reasoning that promoted the gradual rather than sudden reorganization of knowledge.

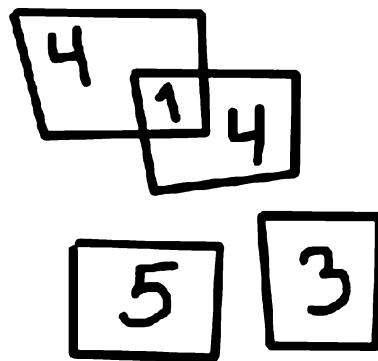
Insight in the Laboratory

Insight can be studied under laboratory conditions. Researchers present participants with a problem, the solution to which resists the direct and effortless application of long-term memory knowledge. For example, neuroscience researchers use remote associate problems that consist of three words – e.g., “blue,” “cottage,” and “cake” – and participants' goal is to find a word that could be associated to each three to produce a meaningful combination (Kounios and Beeman 2014). Participants who answer “cheese” are then asked to indicate whether they experienced the solution as an insightful one (using Likert-scale ratings on dimensions such as suddenness, pleasantness) or as the product of an effortful analysis of the words and their possible connection. Insightful answers are more likely to be associated with neural activation in the right temporal lobe. Researchers attribute this hemispheric asymmetry to the right hemisphere's relatively coarser semantic coding, which results in broader more diffuse activation of semantic elements (Kounios and Beeman 2014).

Other researchers have employed so-called “insight” problems (Weisberg 1995; Webb et al.

2018). Such problems are designed to encourage a misleading initial interpretation. Take for example: How do you place 17 animals in 4 enclosures such that there is an odd number of animals in each enclosure (Vallée-Tourangeau et al. 2016)? The problem masquerades as a simple arithmetic one, and indeed participants initially engage in a fruitless search for 4 odd numbers that can add up to 17. Thus, the initial interpretation inexorably leads to an impasse: the state that insight problems are designed to produce. These problems offer a strategic window through which researchers can observe how the impasse is overcome and a breakthrough experienced. In the case of the 17 animals problem (see Fig. 1), participants must shift the focus of their efforts and seek to exploit set overlaps, double counting at least one animal.

Insight coincides with a conceptual restructuring. Drawing from Gestalt ideas, Ohlsson (1992) proposed that representational change is achieved when the conceptual elements of a problem cohere in a new gestalt, from which the solution to the problem is more clearly anticipated in the participant's mental look ahead the horizon. Thus, in the 17 animals problem, representational restructuring involves casting overlapping sets as the key to the solution, and once this is achieved, the solution can be crafted. The question that animates psychologists at this juncture is what drives the experience of insight in such circumstances; in other words, how do people manage to restructure their representation of the problem so that they clearly appreciate the fruitlessness of their initial



Insight, Fig. 1. A possible solution to the 17 animals problem (Adapted from Vallée-Tourangeau et al. 2016)

interpretation? What brings about a new more fruitful interpretation?

Different answers to these questions are proposed by competing perspectives. The special processes view (e.g., Ohlsson 2018) casts restructuring in terms of unconscious semantic inferences. In turn, the business-as-usual view (e.g., Weisberg 2018) proposes that restructuring is evidenced through the deliberate, conscious, and effortful analysis of the problem elements. The main research strategy employed to adjudicate these proposals involves profiling participants in terms of their cognitive capacities, such as their working memory capacity. Working memory corresponds to a limited-capacity system and range of processes that support the temporary storage and conscious manipulation of information (Baddeley 2012). Researchers then determine the degree of correlation between scores on these measures with performance on insight problems. If insight is the product of unconscious semantic inferences, then working memory capacity should explain little variance in problem-solving performance. In turn, if insight is the product of deliberate analysis, then measures of working memory capacity should correlate strongly with performance. Recent evidence appears to endorse the business-as-usual camp (Chuderski and Jastrzębski 2018), but the debate is far from resolved (DeCaro 2018).

First-Order Problem-Solving and Interactivity

Let us pause and reflect on the research methodology employed by psychologists to measure insight and the cognitive processes that promote it. Laboratory work inevitably involves scaling down complex phenomena in terms of essential components amenable to operationalization and experimental manipulation. Thus, laboratory participants are presented with a set of propositions that describe, ambiguously, some complex states of an abstract world. Problem-solving and hence insight are therefore also constrained to take place in a virtual world simulated internally in the mind. No matter how dynamic the debate between the

special processes and business-as-usual camps, the research methodology constrains the nature of the explanation for insight.

Creative problem-solving outside the psychologist's laboratory proceeds in a very different manner and calls upon researchers to question their ontological assumptions and methodological prescriptions. Clearly, professional artists, designers, and engineers have a different occupational trajectory and a level of expertise that make them different from the naïve participants in a psychologist's experiment, working on a so-called knowledge-lean problem. More important, insight can be considered as an enacted phenomenon (e.g., Henok et al. 2018), that is, it manifests through physical actions with and through the world within which a reasoning agent is embedded. Some problem-solving researchers have paid insufficient attention to the interactive nature of thinking, focusing rather on what has been termed second-order problem-solving (Vallée-Tourangeau and March 2019), that is, problem-solving that proceeds from abstract descriptions of states of the world and must inevitably involve changes in mental representations. In contrast, first-order problem-solving proceeds through the active manipulation of a physical model of the problem. Take the 17 animals problem again. When participants are invited to solve the problem by building a physical model of a solution – using pipe cleaning pieces and animal figurines – they are more likely to derive a correct solution compared to participants who are asked to sketch a solution of the problem (Vallée-Tourangeau et al. 2016). Interactivity is an ontological substrate (Steffensen 2017) from which new ideas arise. Casting insight as the product of first-order problem-solving activity identifies a much broader range of important features of creativity and discovery and opens up the field of enquiry beyond the confines of the current debate in cognitive psychology. We limit our discussion here to eight features of first-order problem-solving that have not been considered in current models of insight.

1. **External Storage.** Working with a physical model of a problem reduces the need to

mentally represent the problem. The world is its own best model (to adapt Brooks 1990), and there is no need to represent it, or to mentally manipulate these mental representations, or to rehearse and store these representations. The world is there to see and act upon. Expanding storage frees internal cognitive resources and reduces working memory burden (Vallée-Tourangeau et al. 2016; Vallée-Tourangeau and Vallée-Tourangeau [Under Review](#)) resulting in more flexible reasoning.

2. **Boundary Objects.** Interim solutions, proto models, and sketches are transactive memory objects (Fiore and Wiltshire 2016) that bridge the past to future possibilities. Creative problem-solving and the occurrence of an “insight” occur along a trajectory dotted with such boundary objects.
3. **Unfolding and Undergoing.** Problem-solving is a transformative activity. The reasoner at time 1 is not the same reasoner at the time of the solution. He or she has been transformed by the proto-solutions formulated in the process of arriving at a satisfactory or correct solution. This process of transformation is shaped contingently by the intermediary steps to a solution. Insight reflects a transformation (Ingold 2014; Glăveanu et al. 2013; Vallée-Tourangeau and Vallée-Tourangeau 2014a).
4. **Serendipity.** When thinking with and through the world, the construction and manipulation of a physical model of the problem can capitalize on felicitous but unplanned results. Serendipity plays a role for large and small discoveries (Copeland 2019); so-called strong serendipity in science involves discovering something completely unexpected (Alcock 2010). A weaker form of serendipity is observed in insight problem-solving when the task environment supports the interaction between an agent and a physical model of the problem (e.g., Fioratou and Cowley 2009), and fortuitous configurations can exert a significant influence on the problem-solving trajectory (Steffensen et al. 2016; Ross [Forthcoming](#); Ross and Vallée-Tourangeau 2020).
5. **Moving Fast, Thinking Slow (Polytemporality).** Processes operating at different time scales are involved when manipulating external representations in problem-solving (Bocanegra et al. 2019). Action-perception loops operate quickly, triggered by the direct perception of an action affordance in the environment, and are not mediated by slower deliberative thinking. The resulting environmental changes may also facilitate more contemplative reflections, engaging different types of cognitive processes.
6. **Executive Functions.** If creative problem-solving is a process driven by actions in the world, then we must conceive of executive function (e.g., the allocation of attentional resources) and executive control (e.g., what information from long-term memory to retrieve) as systemic processes (Vallée-Tourangeau et al. 2015; Vallée-Tourangeau and Vallée-Tourangeau [Under Review](#)). The endogenous homuncular challenge of central executive functions in traditional models of working memory is reformulated by acknowledging distributed exogenous factors that come about through changes in the world; these changes guide and constrain the allocation of attention and the retrieval of long-term memory knowledge.
7. **Gesturing Expands Thinking.** Gesturing lightens the load on the speech-based memory store, by shifting some of the representational burden on a visuospatial store (Goldin-Meadow and Wagner 2005). The linear constraints of a speech-based representational system do not characterize how information can be conveyed in gesturing. Gestures can also enhance creative problem-solving by exploring the praxic potential of objects, unveiling additional action affordances (Kirk and Lewis 2017).
8. **Embodiment.** From a general interactionist perspective, the body can be seen as a semiotic medium and modality through which understanding is distilled and communicated. Body positioning and movements are used by teachers and learners to communicate and understand concepts or varying complexity (Alač and Hutchins 2004; Azevedo and Mann 2018). To adapt Hall and Nemirovsky (2012, p.

208), bodies don't simply serve "to carry around a mind that processed mental content." Rather sense-making is more productively understood in terms of interacting embodied agents (Steffensen 2017).

Enacting the Possible

Creative problem-solving in the world encourages us to appreciate the co-constitutive forces that synchronously and recursively shape the problem-solver and the environment in which he or she is embedded. Interactivity continuously reifies a shifting topography of action affordances. As a result, the possible is woven dynamically through movement and exploration. Creative problem-solving of the first-order kind reveals as well as creates the protean nature of the possible. The possible is thus best appreciated in terms of a transactional logic.

The genesis of a new idea is likely shaped by a complex configuration of processes involving a great deal of interactivity among people and things. Psychological research has hitherto been constrained by a dual commitment to methodological individualism and neurocentrism (Vallée-Tourangeau and Vallée-Tourangeau 2014b). From this perspective, a new idea arises in a person's head, and the cranial events that bring this idea about can be quantified and imaged. Neuroscientific measuring instruments work mostly with immobilized participants, and so they reduce the problem-solving activity to one that depends exclusively upon internal resources – such as those implicated in the solution of a remote associate problem illustrated earlier.

However, the radical scaling down of the processes responsible for the genesis of new ideas necessitated by these theoretical and methodological commitments decreases the likelihood that these research efforts can offer an explanation of creative breakthroughs in science, the arts, or indeed any other cognitive activity that has a physical component. Case studies of innovation and discovery track much longer temporal trajectories than those explored under laboratory conditions and involve a degree of interaction with

artifacts and people that are rich and complex. Findings such as the relative hemispheric asymmetry in insightful solutions to remote associate problems do not meaningfully inform how new ideas are formulated and developed in science (e.g., Darwin's efforts to formulate the theory of evolution in successively clearer forms through 1837–1838) or the arts (e.g., Picasso's intense period of preparatory work leading to *Les Femmes d'Alger*). A reasoner may toil for days or months (or even years) on an engineering problem or a work of art. This is not to say that scientists, scholars, or artists cannot be profiled along psychometric dimensions (such as working memory capacity or thinking dispositions), but a creative arc can be complex, interactive, and contingent. The lean theoretical offerings from the current debate in the psychology of insight are sharply exposed when discovery is seen as a protracted process that concatenates hunches, observations, and actions over time and space.

Systemic Thinking Model (SysTM). A shift away from methodological individualism calls for a reconceptualization of human information processing. The shift must allow for, rather than dismiss, the constitutive elements of first-order problem-solving. It must guide the study of the transactional processes coupling people and artifacts in the enactment of insight. The systemic thinking model (SysTM; Vallée-Tourangeau et al. 2015; Vallée-Tourangeau and Vallée-Tourangeau 2017) aims to address this gap. SysTM conceives thinking as a cognitive process that evolves in time and space and results in a new cognitive outcome. As such, it provides a conceptual framework to account for the emergence of new "cognitive possibles," surpassing what was likely or achievable, through the situated use of higher cognitive operations ranging from making inferences to problem-solving and decision-making.

The model distinguishes between deductive and inductive cognitive processing and posits that behavior can be induced from possible actions offered by the immediate environment as much as it can be deduced from mental processing. Second-order problem-solving has been exclusively modelled through deductive

processing where reasoners are constrained to rely on a mental representation of a problem space (Newell 1980). First-order problem-solving, however, is not well modelled by deductive processing proceeding from a representation of the problem space and its mental exploration. To account for the emergence of solutions in a situated agent-environment ecosystem, we need to extend our conception of cognitive activity to encompass not only deductive but also inductive processing. Inductive processing takes place in situations where it is possible to act upon, and interact with, the elements of a problem space. Such interactive situations support the perception of possible micro-actions within one's environment or "micro-affordances" (Ellis and Tucker 2000) that can be acted upon without being mediated by goal-oriented symbolic activity. Three-dimensional artifacts can be picked up, moved, rotated in physical space, and rearranged in the world. When agents engage in these exploratory actions, they transform their perceptual input while preserving their cognitive resources. This inductive processing paves the way to insightful but unpremeditated and serendipitous "aha" moments. Altogether, SysTM provides a framework to support the study and develop our understanding of how cognitive events may arise from the coordination of mental and physical resources underpinning insightful problem-solving.

Much remains to be understood, however, in relation to the impact of micro-affordances on inductive processing and the mechanisms that underpin first-order creative cognition. Evidence suggests that increasing interactivity and opportunities for inductive processing improves solution rates in insight problem solving (e.g., Fioratou and Cowley 2009; Henok et al. 2018; Vallée-Tourangeau et al. 2016; Weller et al. 2011), but also in complex probabilistic inference tasks: through the use of systematic video-based behavioral analyses, Vallée-Tourangeau et al. (2015, Experiment 4) demonstrated that reasoners who engaged in the most transformative actions were also more likely to make a correct Bayesian inference. Still, much remains to be understood about how this improvement is realized. Micro-affordances are largely studied in the context of motor-controlled actions (e.g., grasping), but little

is known about how, when, and for whom they may support insight in particular and cognitive performance more generally. More research is needed to identify how insight emanates from transactions between individual cognitive resources and environmental affordance properties along the spatiotemporal trajectory of thought.

Expanding the Realm of the Possible Through Insight: Methodological Reflections

Research efforts have offered interesting answers concerning the neural underpinnings of insight phenomenology, the role of a conceptual impasse as a triggering condition for unconscious representational restructuring processes, and the importance of cognitive capacities in the ability to solve so-called insight problems. These developments pertinently address what we have called second-order problem-solving. We contend, however, that creative cognition which the concept of insight might more meaningfully capture is a first-order problem-solving *activity*. To better understand how people *make* the impossible possible, research should forefront interactivity and casts insight as a relational phenomenon. Methodologically this means designing problem-solving tasks that allow participants to build and interact with physical models of the problem or the problem solution. Detailed qualitative coding of actions (e.g., Steffensen et al. 2016) and changes to the physical configuration of the problem can help better understand how the eight features of first-order problem-solving outlined earlier contribute to the discovery of a new idea that results in the solution to a problem. Designing interactive problem-solving task environments is the best way to escape the Procrustean trap of methodological individualism. To cast insight as a relational phenomenon also encourages observing groups of reasoners as they labor to develop new ideas and solve problems (Fiore and Wiltshire 2016). Steffensen (2017) offers an interesting example of problem-solving in the wild, and how insight is distilled through the language and actions of two interacting protagonists. Foregrounding interactivity thus also means

investing research capital in observing how insight emerges in dyadic collaborative problem-solving activity. The importance of the deep connection between people and the rich world within which they are situated for understanding insight also has implications for researchers of the possible more generally: in all likelihood, and perhaps paradoxically, what people find conceivable, imaginable, or thinkable might be better understood at the point of contact between the mind, the hands, and the world. The possible is not just an intellectual concept; future research on the possible would benefit from expanding its scope to include the study of perceived affordances that is the role played by the perception *possible* actions played in what people deem possible.

Conclusion

We opened this entry with some reflections on the etymology of the word “insight,” noting the tension between “inner” and “sight” and the relation with “new possibles.” When research focuses on the narrow neuro-temporal signature of insight in second-order problem-solving, it seems appropriate to characterize insight as a mental phenomenon, as an inner state of mind. However, when creative problem-solving is assessed from an interactivist perspective, the origins of the new possible seem to be in the world, that is based on the perception of changes in the world. Creative problem-solving is synonymous with changes in the world – changes to a sketch, a manuscript, a sculpture, and a prototype. These changes may reflect the implementation of a plan, but they may also be brought about or brought through actions that were not premeditated; the changes may also be entirely serendipitous in nature. A hyphen might be more appropriate in this instance, “in”-“sight” rather than “insight,” to better capture this perceptual dimension of creative problem-solving and underscore the importance of enacting and tracking changes in the world in the genesis of new ideas. We recently conjectured (Vallée-Tourangeau and March 2019) that new ideas are perceived rather than cogitated, and in that case, creativity and the genesis of new possibles might be better captured with the term “outsight.”

Cross-References

► Serendipity

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Inspiration

Vlad P. Glăveanu
School of Psychology, Dublin City University,
Dublin, Ireland
Centre for the Science of Learning and
Technology, University of Bergen, Bergen,
Norway

Abstract

Inspiration denotes a mundane experience that has a long history of being reflected upon and aspired to. However, due to its complexity and mystical associations, it has received until now little scientific attention. When studied

empirically, this phenomenon is typically understood as a cognitive or motivational process, one that involves both a receptive (inspired by) and agentic (inspired to) dimension. Its relation to creativity in particular has been of considerable interest, with different authors portraying inspiration as either an antecedent or consequence of getting creative ideas. Sociocultural psychology, for example, understands inspiration as a state of active receptivity, one in which the person is animated to pursue and explore the possible. This entry starts with the definition of inspiration and its history, before moving on to summarizing empirical research in this area. It focuses in particular on the relation between inspiration, creativity, and the possible within a sociocultural framework. Some reflections on how to cultivate inspiration or, rather, the conditions that foster it, are offered towards the end.

Keywords

Inspiration · Inspired by · Inspired to · Creativity · Possible · Sociocultural psychology

While the notion of inspiration commonly appears in lay discussions, scientific studies of this phenomenon are scarce. On the one hand, lay people are reminded of Edison's remark that genius is 1% inspiration and 99% perspiration or, conversely, of the ancient view that creators and leaders work with the help of "divine" inspiration. Scientific research in this area, on the other hand, has a great contribution to make both to our understanding of inspiration and of the possible, by pointing to the mind's readiness to expand its own range of possibilities. This kind of research is of interest across disciplines and, indeed, inspiration attracted attention in a number of fields, e.g., theology, literary criticism, management, engineering, education, the arts, as well as several branches of psychology (Thrash et al. 2014, p. 495).

Denoting a familiar type of experience, inspiration is a multifaceted phenomenon that can be triggered by a variety of encounters: with role models and mentors, with nature or beauty, or with the divine in revelation (Thrash and Elliot 2003, p. 871). Moreover, inspiration can be experienced

at different levels of "intensity," from more mundane forms of getting new insights to intense moments of epiphany and awe that can mark one's very existence (see entry ► "Awe"). It is specific for the activity of talented artists, scientists, inventors, or entrepreneurs, but also present in daily events and undertakings. As Hart (1998, p. 10) noted, "what is common among these is the idea of inspiration as a specific and nonordinary process of learning or knowing." Inspiration is thus an experience that involves not only affect but also cognition, motivation, and, more generally, the person as a whole in his or her interaction with the world.

This entry will start by defining inspiration and considering it in historical context. It will continue with a brief review of empirical research on inspiration – both quantitative and qualitative – and focus on a sociocultural approach to it. Last but not least, it will consider how inspiration can be cultivated, even if it should not and, indeed, cannot be willed.

Definition and History

Etymologically, the notion of inspiration comes from the Latin *inspirare* which means "to breathe into" (*in* plus *spirare* or "to breathe," also related for the word for "spirit"), "to be filled," or "to inflame." Related to the Latin conception is also the Greek origin of the term for *enthusiasm*, which implies being possessed by a god or becoming the recipient of divine inspiration (Hart 1998, p. 8). Each of these associations continued through the ages, e.g., the view that inspiration comes from above or from beyond the person, that it somehow takes possession of the creator, and that it generates strong emotional reactions. These ideas resonate with the general definition listed in the Oxford English Dictionary: "a breathing in or infusion of some idea, purpose, etc., into the mind; the suggestion, awakening, or creation of some feeling or impulse, especially of an exalted kind" (Simpson and Weiner 1989, p. 1036).

Several of the features mentioned above – e.g., ideation and insight, creativity, exaltation – are present also in scientific definitions and approaches. For example, Hart noted that:

Inspiration is a specific epistemic process (...) characterized by a remembrance or recognition of some knowledge or perspective valuable in the social or psychological context given. The acquisition or awareness of knowledge takes the form of an expansion of understanding that involves (...) transcendence of the conventional. As such, inspiration describes (...) knowing that can be cultivated but not willed. (Hart 1998, p. 32)

This definition captures, to some extent, what Thrash and Elliot (2003) identified as the three main components of inspiration: transcendence (awareness of new possibilities), evocation or receptivity (not attributing the responsibility for being inspired to oneself), and motivational approach (positive activation). The main difference lays in the cognitive or knowledge emphasis of the former, and the motivational emphasis of the latter. Both conceptualizations, however, underline the distinction between a more passive and receptive element of inspiration (“being inspired by”) and a more dynamic, action-oriented one (“being inspired to”) (for a more detailed discussion see Thrash and Elliot 2004). Last but not least, the definitions above both point to the link between inspiration and creativity or creative ideation (see entry ► “Creativity”).

These associations have, of course, their own history, and it is interesting to note that the meaning, place, and value of inspiration varied across historical times (see also Hart 1998). For example, in the ancient world, inspiration was considered to come from outside the person, from gods or the muses, who would “fill up” their recipient with skills and ideas. Interestingly, two opposing views of this experience were already available: the rational and solar path of Apollo versus the wild, unpredictable, and orgiastic influences of Dionysus. The belief in divine inspiration was kept through the Middle Ages, resonating with the value placed, at the time, on faith and revelation. The Renaissance marked a turning point in this regard, gradually leading to the “internalization” of inspiration and its processes; i.e., inspiration was attributed to the unique qualities of those inspired. The advent of psychology as a science, many centuries later, took further steps into making inspiration and intra-psychic phenomenon, replacing it with

illumination or insight and attributing it to the unconscious. This last association, cemented during Romanticism, helped it gain in popularity, but also made it difficult to advance the scientific study of inspiration, at least within the positivist tradition. In contrast, contemporary accounts of creative people tend to attribute inspiration back to the environment, contract with nature, and even transcendental influences (Thrash and Elliot 2003, p. 872).

What this brief historical overview points us to is the fact that, beneath the surface of tidy definitions, inspiration as a phenomenon presents us with a range of paradoxes. They are represented by the simultaneity, in the experience of being inspired, of different, oftentimes contradictory, states or impulses: passive and active, order and chaos, rationality and irrationality, equilibrium and disequilibrium, individuation and de-individuation, conscious and unconscious, external and internal, divine and human, ordinary and extraordinary, among others. This state of affairs made Thrash and colleagues note that “it is through grappling with the paradox of inspiration, we argue, that psychology will shed light on the farther reaches of human nature” (Thrash et al. 2014, p. 496). And, we can add here, also help us reach a deeper understanding of creativity and what it means to explore the possible.

Research on Inspiration

As mentioned from the start, empirical research on inspiration has been scarce, even if not altogether absent. Progress in this area has been hampered, as Thrash et al. (2014, p. 495) remarked, by “definitional ambiguities and inconsistencies, an absence of foundational construct validation research (...) and a variety of myths and misconceptions about inspiration that have arisen from sources other than rigorous science.” And yet, the past three decades have witnessed an increased number of studies in this area, both quantitative (psychometric and experimental) and qualitative (observation and interview-based).

Many of these advances can be attributed to work done by Todd Thrash and Andrew Elliot. As mentioned in the previous section, they proposed

an influential three component framework of inspiration including “motivation (e.g., activation, energy), evocation (e.g., feeling overtaken, uncontrol, attraction from the object, openness), and transcendence (e.g., positivity, enhancement, clarity)” (Thrash and Elliot 2003, p. 873). Later on, a process model was added, one that distinguishes being *inspired by* and being *inspired to*. In linking the two models, the authors proposed that being inspired by gives rise to transcendence and evocation, while being inspired to gives rise to approach motivation (Thrash and Elliot 2004). The study of these components and processes required a valid measurement tool and this was conceived by Thrash and Elliot (2003) in the form of the Inspiration Scale (IS), an eight items, self-report instrument designed to capture primarily trait inspiration (although claimed to be useful also for the study of state inspiration). The IS comprises two subscales with four items each, one focused on frequency and the other one on intensity. Examples of items include: “Something I encounter or experience inspires me” and “I am inspired to do something.” While these formulations sound rather general, the IS has proven, according to its authors, good psychometric properties, demonstrating both invariance across time and invariance across populations.

Using this scale, Thrash and Elliot (2003, p. 885) documented a number of correlations between inspiration and a series of psychological and biological indicators. For instance, inspiration was found to correlate positively with the behavioral activation system (but not the behavioral inhibition system), with extraversion and openness to experience (but not with neuroticism and conscientiousness; see entry ► “[Openness to Experience](#)”), with positive emotions (but not negative ones), with work mastery (but negatively with competitiveness), with intrinsic motivation (but negatively with extrinsic motivation), with creativity, perceived competence, self-esteem, and optimism. These findings have been discussed by the two authors in relation to the three components of inspiration and considered to support the general model. However, a distinctive limitation of these studies has to do with their correlational nature, making it difficult to draw

causal inferences. Thus, for example, one might wonder if creativity, perceived competence, self-esteem, and optimism are antecedents, consequences of inspiration or both.

There are few experimental investigations of inspiration, principally emerging from the work of Takeshi Okada and his collaborators, who focused primarily on the relationship between inspiration and creativity. For example, they tested recently whether viewing or copying prior examples impacts creative outputs in art (see Okada and Ishibashi 2016). In three experiments, they found evidence that copying unfamiliar abstract drawings led participants to produce drawings what were qualitatively different than the original model, that exposure to unfamiliar styles facilitated creativity in drawing, and that both copying and viewing artwork with an unfamiliar style had this effect (while merely thinking about alternative styles did not). The authors explained these findings by pointing to the relaxation of cognitive constraints and the emergence of new perspectives (see entry ► “[Perspective](#)”). When people imitate the works of others, they relate them to their own cognitive framework but, when the latter does not connect, the framework itself needs to be challenged (i.e., constraint relaxation takes place) and changed (through the birth of new perspectives). These are important findings, but they need both to be replicated, including on different populations, and complemented by a richer description of inspiration as a process, an aim accomplished best by qualitative research.

Hart (1998) reported one of the first investigations of this kind, using 70 in-depth interviews with participants from a wide range of professions (unlike psychometric and experimental studies, mostly conducted on undergraduate students), to examine what experiences and meanings are associated with inspiration. He discovered four phenomenological characteristics of inspiration: connectedness, openness, clarity, and energy. While one or the other might get to dominate a person’s experience of inspiration, the phenomenon itself requires all four dimensions. Another, more recent study, was conducted by Glăveanu and colleagues (2013) on the experience of creators working in five different domains: art, science,

design, music, and film scriptwriting. While this research was not primarily focused on inspiration, it did document, in creators' discourses, the paramount importance of this phenomenon. For instance, in referring to their approach to work, artists often defined themselves as "sponges," as being "90% in a receptive state," and allowing themselves to be "impregnated" by things and people who enter an inner "factory of fermentation." In design "inspiration comes from everywhere," so you need to "keep your antennas out," to be "attentive" and "open to the world," to be "nurtured" by the work of others, to "collect" things, and to store them in a "bank" of ideas. Scriptwriters have habitually the attitude of a "hunter in the forest," "permanently nourished by the spectacle of others," and so on. These accounts, as we shall see next, are important for reexamining the link between creativity and inspiration and, even more, for reflecting on its relation to the possible.

Inspiration, Creativity and the Possible

One of the most extensively studied connections in the literature is that between inspiration and creativity. In fact, this relationship is so close that Thrash and colleagues (2014, p. 496) listed various possible roles played by inspiration in the creative process including delivering ideas, evoking creative states, facilitating insight, making creators aware of ideas, motivating them, and even being synonymous with insight or with creativity itself. While inspiration might participate in more than one way within the creative process, it is counterproductive to equate the two. The latter would make it difficult to capture the unique characteristics of each or, more generally, to consider the temporal order between these phenomena.

With regard to temporality, one common belief is that inspiration *precedes* creativity. In other words, one needs to feel inspired before producing something novel and valuable. This is what Hart (1998) associated with the phase of waiting for inspiration or illumination in the creative process. He wrote that, "the extent to which we courageously invest or risk our energies in a particular

venture will reflect in the depth of the encounter and of the quality of the inspiration" (p. 8). One of the main limitations of this standpoint is that inspiration tends to be reduced to the first, initial or preparatory stages of creativity – couldn't a creator feel inspired throughout? Thrash and his collaborators seem to believe so. In fact, they proposed and tested a rather usual idea: that inspiration to create is "a motivational state that is evoked in response to getting a creative idea and that compels the individual to transform the creative idea into a creative product" (Thrash et al. 2010, p. 470). As such, instead of fueling creative ideation, inspiration is rather *fueled by it*. The emerging image is one of inspiration as mediating the link between the creative idea and its realization. As mentioned by Thrash et al. (2014, p. 501), "all forms of inspiration are fundamentally constructive processes in which new entities (e.g., poems, future selves, or a spiritual life) are brought into fruition."

How does this claim fare when it comes to empirical testing? Thrash and colleagues (2010) offered some evidence supporting their view, at least in the field of creative writing. Several studies in this area evidenced the fact that getting creative ideas and being inspired are distinct phases and that the former precedes the latter. Moreover, inspiration predicts creativity in writing (while effort predicts technical merit). Last but not least, peaks in inspiration predict peaks in creativity. Based on this, the authors proposed the "transmission function" of inspiration, mediating between the creativity of the idea and that of the product. They concluded as follows:

Although creativity researchers sometimes portray inspiration as an account of the *origin* of creative ideas – creative ideas are given by God or a Muse – our portrayal of inspiration as concerning the *transmission* of creative ideas is consistent with its usage in theology. Rather than being a source of creative ideas, inspiration is the resulting intentional (i.e., object-focused) state, which has the creative idea as its content and actualization of the idea as its aim. (p. 470)

But, once more, if inspiration is not the source of creative ideas, can it be reduced to a mere "response" to them? More importantly, is being inspired a state of mind that is closed to the

possible – in this case, possible new ideas emerging – and focused on the realization of one single, inspiring idea? A sociocultural reading of inspiration differs considerably in this regard: it views inspiration as opening up the possible rather than turning one possibility into actuality. As a discipline focused on the interdependence between mind and culture (Shweder 1990), sociocultural psychology considers inspiration to be both a relational process, connecting person and environment (both “internal” and “external”), and a personal experience. The essential characteristic of inspiration as an experience rests in the mind’s readiness to be inspired. As Pasteur allegedly remarked, fortune favors the prepared mind (Eckert and Stacey 1998). This means that while specific encounters, ideas, or events might have a higher chance of inspiring people (to act or, more specifically, to act creatively), inspiration itself requires the “collaboration” between person and environment in which the person experiences a state of *alert receptivity*. This state of mind captures one of the main paradoxes of inspiration as a phenomenon: the interplay and, to a great extent, simultaneity between passivity and activity, between being inspired by and being inspired to. What is the person alert and receptive to? In summary, he or she is *receptive to new, emerging perspective, and alert as to what their possibilities might be for both thought and action*.

There is, thus, an important connection to be made between inspiration and the possible. Previously, Glăveanu (2017) distinguished between three inter-related, cyclical stages in engaging with the possible: awareness, excitement, exploration. Inspiration characterizes best the experience of excitement about the possible and what might come next, a basic form of receptivity and openness. As such, the experience of being inspired is often triggered by a new perspective that makes the person aware that more is conceivable within a given situation. This understanding does not subordinate inspiration to creativity – indeed, someone might be inspired to do other things, for instance, meditate rather than create, and there are moments in the creative process that are seemingly void of inspiration (i.e., when new perspectives are neither

encouraged or looked for). There are here some points of overlap with Thrash’s conception and also some major differences. The main difference has to do with the fact that inspiration is not seen as a search for how to best implement a certain idea, but a search for new perspectives that open up new possibilities. In addition, a new dimension that is added by the sociocultural approach is the community one. Psychological accounts typically locate inspiration within the person or, at best, interpersonal exchanges. Yet, inspiration is also a social and cultural phenomenon inasmuch as broader historical trends, making up the *zeitgeist* of a certain era and place, influence what fuels the imagination and creativity of an individual or a community.

Cultivating Inspiration

A main point of agreement among different theorists is that being inspired is associated with (mainly) positive consequences. Key among them, as argued here, is the person’s propensity to engage with what is possible and explore possibilities beyond the initial source of inspiration. As such, a last important question emerges: how can one cultivate inspiration?

Before addressing this question, we would need to reflect first on how inspiration is expressed since, not knowing what to look for, one would hardly be able to distinguish between being inspired and simply being active or interested. In line with the sociocultural account sketched in the previous section, a person is inspired when he or she explores existing ideas and perspective with a view towards what could emerge from them. Essential to note, once a certain perspective is embraced and pursued, one can no longer talk about inspiration but continued interest. Inspiration, as described before, is characterized precisely by an active and receptive openness to the possible; once a commitment is made, inspiration morphs into other forms of motivation (e.g., the develop further, to translate a perspective into practice). At a phenomenological level, therefore, inspiration is often experienced as an insight that is *about to*

come, that is driven by the source of inspiration (not by the person; what Thrash and colleagues referred to as evocation), that is on the “tip of the tongue.”

What are possible sources of inspiration then? As Hart (1998, p. 27) aptly wrote, “given the right mindset, virtually anything could be found to be a trigger.” While creators working in various domains might mention that they find new, interesting perspectives in nature, in dialogue with other people, by exploring their own unconscious, by copying the work of others, etc. (see Glăveanu et al. 2013; Eckert and Stacey 1998; Okada and Ishibashi 2016), in reality the role and impact of each one will depend on existing dialogues and perspectives. In some cases, the value of what seems like sensible advice, for instance, to look for conceptual distant rather than proximal sources of inspiration, is disproven by research (Chan et al. 2015). As such, producing lists of what could help people get inspired is a rather futile exercise; what matters more is cultivating the kind of receptivity to one’s environment that invites moments of inspiration. In this regard, Hart’s (1998) advice is to reflect on one’s focus, on trust, letting go, and listening. These are useful pieces of advice as they invite us not to commit too soon to one solution, idea, or perspective, to let things incubate for a while, to learn to let go of old, conventional ideas and, last but not least, to listen actively and openly to others and to oneself. Instead of formulating a “one method fit all” approach, cultivating inspiration would benefit from developing meta-cognitive skills that allow the person to monitor when, where, and how he or she gets inspired. Keeping track of the process, including surrounding oneself with potential inspiration triggers, requires considerable reflexivity.

Most importantly, one needs to remember that while inspiration can be cultivated, mainly by developing a deeper understanding of its individual dynamic, it can never be willed or forced. Just like being inspired by the sense of new possibilities is an integral part of our lives, being able to grasp these possibilities requires patience and letting go, not only active pursuit. As Thrash et al. (2014) eloquently remind us:

Yes, it is indeed difficult to elicit inspiration. Inspiration tends to happen to people spontaneously in the natural context of everyday life. Authentic inspiration experiences usually are not the result of a deliberate effort of one party (e.g., a researcher, employer, or author of a self-help book) to inspire another; literally and figuratively, inspiration refers to ‘breathing in,’ not to being ‘blown into.’ (p. 506)

Conclusion

Inspiration is an ordinary experience which has an important part to play both in creativity and in how we engage with and explore the possible. While it has been theorized in the past in purely psychological terms, as a motivational state or an epistemic process, inspiration actually takes place at and through the encounter between person and world. Indeed, society, culture, and community all participate in getting inspired, even if their work is often invisible. As such, a sociocultural reading of this phenomenon describes it as active receptivity, a socio-psychological and embodied state in which a sense of excitement about what is possible is both triggered and maintained. This means that inspiration might not start from a creative idea and lead to its realization, as it has been proposed in the past, but precede this stage. In fact, choosing to pursue a particular idea might very well signal the end of being inspired. In contrast, inspiration, as discussed here, is characterized by the open-ended process of looking for new perspectives based on the relationships established between them. As such, it can be cultivated by becoming sensitive to new perspectives acquired through dialogues with others, exploring nature, reflecting on one’s own experiences, valuing accidents and the unexpected, etc. In the end, while inspiration itself can never be willed, the conditions for being inspired can and should be understood and fostered; after all, this is a state reached most easily by *prepared minds*.

Cross-References

- [Awe](#)
- [Creativity](#)

- Openness to Experience
- Perspective
- Spirituality

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Integration

- Spirituality

Intelligence

Robert J. Sternberg

Department of Human Development, College of Human Ecology, Cornell University, Ithaca, NY, USA

Abstract

This chapter reviews conceptions of intelligence. It starts off with the conception of Albert Binet. Binet truly understood intelligence. But many of his insights were later lost. The chapter discusses the following: first, the psychometric conception, pointing out that, in some ways, the psychometric conception of intelligence has closed off rather than opened up possibilities for the future; second, cultural conceptions of intelligence, which seek to open more possibilities for the future; and third, the conception of adaptive intelligence, which views intelligence in terms of real-world demands rather than demands artificially imposed by contrived general-intelligence tests. Finally, the chapter draws conclusions.

Keywords

Adaptive intelligence · Alfred Binet · Cultural approach · Intelligence · Psychometric approach

The concept of intelligence once promised to open up a world of possibilities. What scholars and practitioners at the time did not realize at the time was that, for many people, it would close worlds of possibilities. What started off as a positive vision thus became a much more mixed one.

The Contribution of Alfred Binet

The positive vision started with the work of Alfred Binet and Theodore Simon at the turn of the twentieth century in France (Binet and Simon 1916). Binet and Simon had been asked to develop a test of mental abilities that would

distinguish those who could profit from normal schooling from those who could not – who needed special classes where the pace of learning was slower and where special remediation was offered to help children realize what appeared to be their limited potential. Binet and Simon's work led to the development of scales to measure levels of intelligence. There were some critical ideas underlying Binet's work, here and elsewhere.

First, intelligence is judgment. It involves a critical faculty and especially self-criticism. Most of all, it is used in order to adapt to the environment – the real environment in which we live.

Second, intelligence is potentially modifiable. Binet planned to introduce mental orthopedics to help children improve their intelligence. He died before he got around to developing the idea fully.

Third, intelligence tests can be designed to offer opportunities, not to take them away. His test was designed to offer to children who were slow-learners opportunities to learn in classrooms designed especially for them. And the test was further designed to ensure that children who were normal learners but behaviorally challenged and challenging would not be shunted to special classrooms for slow learners because teachers in regular classrooms did not want to deal with them.

The Traditional Psychometric Approach to Intelligence

Many of these assertions were not things one could take for granted in the day of Binet. Sir Francis Galton, a British polymath, had different ideas about intelligence (Galton 1869/1892/1962, 1883/1907/1973). Galton's beliefs came close to being the opposite of Binet's. Galton believed that intelligence inhered in psychophysical abilities, such as pitch discrimination and visual discrimination, rather than in judgment. Further, he believed that intelligence was largely fixed rather than modifiable. Third, he viewed intelligence as something that did and should deprive certain

people of opportunities, even reproductive ones, as he was a eugenicist. So, Binet was entering into a domain where the beliefs he introduced were by no means ones that could be taken for granted. Binet was largely about opening up possibilities, while Galton, in many ways, was about closing them off. Who won, so to speak? Oddly, each got a little of his way, but for different reasons.

About the same time that Binet was doing his work on developing an intelligence test, Charles Spearman (1904, 1927), a British scholar, was studying intelligence, but from a different vantage point. He was more theoretical and less applied in his orientation than Binet. His fundamental insight – although he had many other insights as well – was that various tests of intelligence, when correlated with each other, all correlated positively. Spearman invented a statistical method, which he called “factor analysis,” which would provide a way of finding hypothesized latent sources of individual differences that underlay mental-ability test scores. When applied to various tests, factor analysis yielded a single general factor – a factor common to all of the mental-ability tests – as well as factors or sources of individual differences specific to each of the tests. The theory thus came to be called the “two-factor theory,” because it hypothesized two kinds of factors – general and specific – underlying intelligence. As one might expect, Spearman was much more interested in the general factor, as it permeated all of the tests. He did not know just what the general factor represented, but he suggested it represented what he referred to as “mental energy.”

Many different factor-based, or “psychometric,” theories emerged from the work of Spearman. For example, Godfrey Thomson (1916), a Scottish psychologist, suggested that the fact that there was a general factor of intelligence did not actually suggest that a single capacity underlay performance on intelligence tests. Rather, it suggested that one or more things may underlay performance on all of the tests. If, say, 20 mental capacities were required for performance on all of the mental-ability tests, then they all would appear in the general factor. The general factor suggested only that there were some common mental

capacities of an unknown number. Thomson called these capacities “bonds.”

Louis Thurstone (1938) later suggested that Spearman and Thomson both were wrong, that in fact what underlay intelligence were seven related but distinct “primary mental abilities,” namely, verbal comprehension, verbal fluency, spatial visualization, inductive reasoning, memory, numerical skill, and perceptual speed. Others pointed out that because Thurstone’s factors were correlated with each other, these factors could themselves be factored to yield a general factor, so that the argument became one of which was primary, general intelligence or the Thurstonian primary mental abilities.

Arguments such as these persisted until John B. Carroll (1993) factor-analyzed practically all of existing data sets with factorial analyses of intellectual abilities and proposed what he called a “three-tier” model of intelligence. His model, although not the first hierarchical one, synthesized the theories and findings of many who came before him. The first tier consisted of quite specific factors, the second of group factors more akin to Thurstone’s, and the third only of *g*. This model, and variants of it, one called CHC (Cattell-Horn-Carroll) theory (McGrew 2005), dominates psychometric thinking about intelligence today.

From the standpoint of an Encyclopedia of the Possible, I would argue that the development of mainstream psychometric theory on intelligence has been disappointing. There are three reasons for this.

First, the tests that resulted from the psychometric approach have been at least as much about closing off possibilities as about opening them up. Psychometricians have tended to believe that intelligence is relatively narrow, fixed, and largely genetic in origin. Moreover, testing of intelligence and related skills has been used as much to close off possibilities as to open them up. Who will be admitted to a selective university? Who will be admitted to a gifted program? Who will be selected for financial aid? Who will be hired for a job and who will not be? Who will be placed in higher school tracks and who in lower ones? In more extreme cases, who should be allowed to enter a

country and who should not? Who should be allowed to have children and who should not? Which socially defined races, nationalities, or ethnic groups have more intelligence, and which have less? The field of intelligence became one of closing off rather than of opening up possibilities (see Gould 1981; Sternberg 2019a, 2020c, d, 2021). Put another way, Binet won over Galton on the content of intelligence tests but lost on everything else.

Cultural Approaches to Intelligence

Investigators in some traditions other than the psychometric one have tried to be broader and more inclusive in their conceptualization of intelligence. For example, cultural approaches have viewed what is adaptive as in large part as culturally determined (see Sternberg 2020b). Skills that are valuable and that are valued in one culture may be of much lesser value or of no value in a different culture. For example, ice fishing or hunting skills are extremely important for adaptation in some Northern environments, such as in rural parts of Alaska, but may have no adaptive significance in many other environments (Grigorenko et al. 2004). Even what is considered to be intelligent may differ from one cultural milieu to the next. Most informal or folk theories of intelligence are much broader than expert conceptions of intelligence based on psychometric testing (Sternberg 2004). These cultural conceptions represent a broader array of possibilities in life and in conceptions of intelligence than are represented in traditional theories of intelligence.

The cultural theories have been a step forward, but in a sense, they have posed some problems that are the opposite of the ones posed by the psychometric theories. In particular, they have sometimes left people feeling that there is no common core at all to intelligence. They generally have not yielded measurements that are psychometrically sound or generalizable in any way beyond a narrow swatch of people. And they have failed to gather the large following that psychometricians have gathered with the ready application of their intelligence tests to large numbers of people. Often, it has seemed more important to

quantify than to ensure that the quantification is valid in any broad sense (beyond criteria chosen by the same culturally homogeneous people who created and scored the tests). Are there any other options?

I believe we need to return to the original definition of intelligence proposed by Binet and Simon (1916), Wechsler (1940, 1944), early intelligence theorists (“Intelligence and Its Measurement” 1921), and later intelligence theorists (Sternberg and Detterman 1986) regarding intelligence as an adaptation to the environment. I believe that, somehow, in the rush to measure intelligence and related skills, the original definition as well as the conception of Binet somehow got lost. Scholars and technicians became so concerned with the preservation of the intelligence-testing tradition that they began validating new tests against the old ones. This meant that a test was good if it measured what the older tests measured. That closes off all possibility that the conception of intelligence could be broadened because a test would be viewed as valid only to the extent it measured what tests of the past measured. We can do better than that. What would it mean to open ourselves up to a broader conceptualization of intelligence as adaptation to the environment, rather than merely one of intelligence as whatever it is that intelligence tests happen to test (Boring 1923)?

Adaptive Intelligence

Another approach to intelligence is to look at it in terms of its original purpose, namely, broad adaptation to the environment. What are the skills people need in order to fit into the environment or to make the environment work for them?

On this point of view – a more biologically oriented one – intelligence is about not only maximizing one’s own future possibilities, but also preserving future possibilities for others of one’s own species. If humans are to be “intelligent,” they cannot be destroying the environment for the generations to come (Sternberg 2019a). That is, what does it mean to be intelligent if people are working, purposefully or inadvertently, to

increase global climate change, pollution, and other degradations of the environment in which they live? Intelligence should be about creating possibilities for the future, not destroying them.

IQ tests do *not* measure adaptive intelligence. The problem is that real-world adaptive tasks and the kinds of abstract-thinking tasks that appear on conventional intelligence tests are very different from one another (Sternberg 2020e). Indeed, the characteristics of real-world tasks are almost *opposite* to those of IQ-test problems. That is not only why IQ tests fail to measure adaptive intelligence, but also why the whole set of theories of general intelligence has proven to be such a thin reed when it comes to understanding intelligence as adaptation. Real-world problems, unlike IQ-test problems, (a) are for high stakes, sometimes life-changing ones; (b) are emotionally arousing so that emotions often cloud people’s rational judgment; (c) are highly context driven, requiring that people balance many different and often conflicting interests; (d) are lacking in any single uniquely determined “correct” answer and are not susceptible to presentation in multiple-choice or short-answer format; (e) are lacking anyone even to inform us that there is a problem to be solved; (f) do not specify the nature of the problem, which often is unclear; (g) are typically in need of a collective solution by people with diverse backgrounds, points of view, and interests; (h) typically offer only vaguely defined paths to solution, or even more often, no seemingly good path at all; (i) often unfold and need to be solved and then sometimes resolved over long periods of time; (j) often leave it difficult to ascertain what particular information is needed to solve a problem and where that information is to be located; and (k) are often plagued by numerous items of false and often misleading information, sometimes inserted deliberately, and therefore poised to make a useful solution more difficult to obtain. Is it any wonder that people can excel in general intelligence yet be unable to solve basic adaptive problems in their lives?

Researchers in cognitive psychology have found that transfer of training – i.e., generalization of what one has learned from one setting to another – is hard to obtain, even when two tasks

are actually isomorphic, that is, structurally the same (Gick and Holyoak 1980, 1983). The more different two tasks are from each other – the more remote the connection – the less the transfer that is obtained. Adaptive-intelligence problems are wholly different from general-intelligence ones.

According to the theory of adaptive intelligence, there are four abilities central to adaptation to everyday environments and creating possibilities for the future.

Creative Abilities

Creative abilities are used to generate ideas that are both novel and somehow useful (Kaufman and Sternberg 2019). For example, a problem such as increasing global climate change requires creative solutions, which have not been rapid in coming forth. People who are creative tend to gravitate toward activities in which they can create, discover, explore, invent, imagine, and suppose.

Creative abilities involve both skills and attitudes. The skills are needed to generate the novel ideas, but the attitudes are needed to want to generate the ideas in the first place. That is, creative skills are largely useless if they are not actually deployed. Why would people not deploy their creative skills? A triangular theory of creativity (Sternberg 2018) suggests that deploying creative skills requires three interrelated attitudes that are often difficult to marshal.

The first attitude is defiance of oneself. To create new possibilities for the future, one sometimes has to let go of beliefs or ideologies one has accepted in the past. This is hard to do because it means admitting that one's prior beliefs were wrong or, at least, lacking in some respects. Many people do not want to admit to error.

The second attitude is defiance of the crowd (see also Sternberg and Lubart 1995). Defiance of the crowd requires the individual to think or act in ways contrary to the ways other people think or act. But there usually is social pressure to follow the crowd, ranging from others criticizing one's defiance to others ensuring that one is discharged from one's work, or worse, that one is imprisoned or killed. Yet, creativity requires one to follow a path different from that others have followed. Otherwise, one cannot have novel ideas.

The third attitude is defiance of the *Zeitgeist*, or worldview that prevails at a given time. A worldview is often preconscious. One is not even aware one has it. For example, ridding the United States of slavery in the mid-1800s would not seem today to be a challenging question of a worldview – why should anyone at all be enslaved? But at that time, many people in the country – all of them White – believed in slavery and saw it as a viable future for the country. A Civil War was fought over the issue.

It is troubling that future possibilities can be achieved only through creative envisioning of a new future, yet so-called “intelligence tests” do not measure creativity at all (Sternberg 1997). To the extent that intelligence requires not only reruns of what has been done before, but also the creation of new future possibilities, existing tests fall far short. The problem is that the people selected for a power structure that was not chosen for creativity also may not see their way to valuing or rewarding it.

Analytical Abilities

Analytical abilities are what existing tests of intelligence attempt to measure. The tests further measure the knowledge base on which those analytical abilities act (Sternberg 2020a). People who are analytical tend to gravitate toward activities in which they can analyze, evaluate, critique, judge, assess, and compare and contrast.

Intelligence tests, as noted earlier, primarily measure analytical abilities, as well as the knowledge based upon which they operate. The tests tend to measure analytical abilities for fairly abstract kinds of items, such as number series or word classifications, so that the results are as general as possible – that is, as relevant as possible to general intelligence, but this practice comes at a cost.

The question then can become one of how well tests of abstract analytical reasoning measure analytical reasoning (and other forms of reasoning) in more domain-specific contexts. It has been sought to answer this question in the context of scientific/technological/engineering/mathematical (STEM) reasoning. Tests of reasoning for STEM disciplines were devised. The tests required

participants to generate alternative scientific hypotheses, generate scientific experiments, and draw scientific conclusions (Sternberg and Sternberg 2017; Sternberg et al. 2017, 2019, 2020). Further scientific tests as well as tests of general intelligence were done. The tests of STEM reasoning correlated positively with each other, but they did not correlate as well (and sometimes even correlated negatively) with traditional ability tests, such as number series, letter sets, and SAT. So, conventional intelligence tests and college-admissions tests do not even necessarily measure particularly well those aspects of analytical reasoning relevant to STEM research. Put in another way, it is not clear just how generalizable the skills are that are measured by conventional tests of analytical aspects of intelligence.

Practical Abilities

Practical abilities, also referred to collectively as “common sense,” are used to put ideas into practice and to convince others of their value. People who are high in practical abilities are able at implementing ideas, putting ideas into practice, executing on ideas, and persuading others of the value of their ideas. We have found (Sternberg and Hedlund 2002) that (a) practical-intelligence tests tend to intercorrelate positive with each other; (b) sections of practical-intelligence tests – managing oneself, managing others, and managing tasks – tend to intercorrelate positively with each other; and (c) practical intelligence is distinct from IQ.

Why is practical intelligence distinct from general intelligence? The reason is simple: lack of transfer. People can be intellectually adept at solving abstract problems and fail to transfer their skills to everyday problems; conversely, people can be intellectually adept at solving everyday problems but fail at abstract ones.

Wisdom-Based Abilities

Wisdom is one’s ability to use one’s knowledge and other abilities to achieve a common good, by balancing one’s own, others’, and larger interests, over the long-term as well as the short-term, and through the infusion of positive ethical values (Sternberg 2019c). Wise people look out not

only for their own interests and the interests of their family, friends, and other people like them, but also for others who are unlike them. They seek to balance their own with others’ and larger interests. They recognize that, truly, a rising tide raises all boats.

Schools do not teach for wisdom. Indeed, an analysis of US textbooks from the early twentieth century to the present day reveals that, as time has gone on, teaching of wisdom-based content has decreased at the same time that teaching of strictly academic content has increased (Sternberg 2019b). It is little wonder that, at the same time that people’s IQs rose 30 points in the twentieth century (Flynn 1987, 2012), people’s wisdom seems, if anything, to have gone down. If one looks at the problems nations face around the world, including their enthusiastic penchant for voting in dictators or would-be dictators, it is clear that IQ has bought people little, nothing, or perhaps negative gain in terms of being able to solve in a coherent way the problems the world faces.

Conclusion

Intelligence has traditionally been viewed within a tradition emphasizing the psychometric factors that are derived from general-intelligence tests. Certainly, the skills measured by these tests are useful in many different ways (Sackett et al. 2020). But the skills have utterly failed us in terms of creating a better world, not only for our children, but also for us. As I write, many people are locked indoors by a pandemic that our IQ points appear to have been insufficient, to date, adequately to combat? Is this the best humanity can do? If this is the best we can do, then the future will not be for humans, but for viruses, bacteria, and cockroaches.

We need to develop not just general-intellectual skills, but also adaptive-intellectual skills in young people. These are skills needed to solve real problems, not artificially contrived ones. The field of intelligence has become insular, largely divorced from the insights of Binet, Wechsler, and others, that intelligence should be

about functioning in the real world, not on tests measuring arcane knowledge and skills. In some ways, it is a failed enterprise stuck in a paradigm from the early 1900s. The paradigm shows exactly what is wrong with the conception of intelligence as *g*. It is internally consistent at an abstract-analytical level, but offtrack with regard to the real-world problems the world faces today.

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Intentionality

José Hugo Gonçalves Magalhães¹ and João Paulo Maciel de Araujo²

¹University of Pernambuco, Petrolina, Brazil

²Federal University of Pernambuco, Recife, Brazil

Abstract

Intentionality has been understood as the ability to think and behave in accordance with goals previously elaborated by the individual, or the teleological property of mind. In this sense, intentional mental states are typically characterized by displaying contents secondary to the achievement of cognitive and/or behavioral goals underlying the constitution of beliefs, judgments, desires, and expectations directed toward the external world or the subject itself. If, on the one hand, the philosophical interest in the theme goes back to the scholastics, in the scientific sphere, the first empirical research programs on the characteristics and functional role of intentionality for psychological functioning only started in the first decades of the last century. In this entry, the relationship between intentionality and the possible will be analyzed from the role played by intentionality in the formulation, execution, and evaluation of possible action plans. To this end, the rich intersection established between intentionality, free will, and context in determining action directions will be used as a background for the discussion of how the dimension of the possible is

established in intentional action through the interaction between intentional autonomy, free choice, and socio-contextual events. Prior to this discussion, we will present a summary of the state of the art in philosophical and scientific studies about intentionality, aiming to provide introductory information about its ontological, neurocognitive, and conceptual characterization.

Keywords

Free will · Intention · Intentional action · Intentionality · Mental states · Possible

Introduction

While we interact with the world and with ourselves, our mental states inevitably find themselves directed to some kind of content (e.g., external stimuli, thoughts, memories, emotions, internal sensations, among others). When our mental states and resulting behaviors are self-regulated, or, in other words, stem from the planning and execution of goals generated by the mind itself, it is usually understood that both, the mental content and the related behavior, are consequences of the implementation of an intentional mental state. An intentional state of mind is made up of intentions, which are self-generated goals through which we voluntarily exert control over our thoughts and actions. In contrast, unintentional mental states are usually guided by automatic responses to external stimuli (Haggard 2008). This “to intent,” “to be for,” or “to create goals” faculty of the mind is called intentionality.

Intentionality is broadly defined as the ability of mind to create cognitive plans implementing self-controlled behaviors (Miller et al. 2013). It is a highly pervasive property of mind, playing a very central role in the self-organization of behavior and in the informational integration of various cognitive systems, whether human, nonhuman animal, or artificial. In this entry we propose to discuss how the domain of intentionality is related to the possible. Initially, in the two subsequent sections, we will present the state of the art of philosophical and scientific research on intentionality from a historical and conceptual perspective.

In the last section, we will seek to discuss how the dimension of the possible is related to intentionality, considering that intentional states occur through a complex interactional dynamic linking individual to contextual factors and vice versa.

The Philosophy of Intentionality

The term intentionality was originally used by the scholastics. Later in the nineteenth century it was revived by Franz Brentano. According to Brentano (1995), intentionality is the mark of the mental. Thus, the intentionality of mental phenomena distinguishes it from physical phenomena. In other words, physical phenomena do not exhibit intentionality, only mental phenomena do. Despite many interpretations (see Searle 1983; Dennett 1981, 1996; Crane 2001; Merleau-Ponty 1962) this intentional characterization of mental phenomena formed the background of twentieth-century discussions of intentionality in the analytic and continental traditions of philosophy. Mental states like beliefs, desires, hopes, and dreams are always about something. Intentionality is related to our mental contents, i.e., to how we represent the world. Therefore, intentionality concerns the way our conscious mental states are directed to objects and states of affairs in the world.

Philosophically, current discussions around intentionality occupy a prominent place in debates in philosophy of mind. When dealing with issues such as “What is mind?,” “Which beings have a mind?,” “What is consciousness?,” the theme of intentionality always arises to ensure that beyond self-aware individuals along with a large repertoire of cognitive capacities, our thoughts exhibit this characteristic of being *directed at* or *about* something. Despite a diversity of living beings existing on our planet, science already allows us to make a wide range of distinctions between those creatures that are merely alive and those that are alive and have minds, i.e., that are conscious. Whereas a tree is just an organic being, a chimpanzee is a conscious creature that exhibits intentionality through behavior. On the other hand, we human beings not only exhibit

intentionality through behavior, but also discuss, theorize about these intentional characteristics using a sophisticated linguistic apparatus.

However, how to demarcate between creatures that have a mind from creatures that don't have a mind? This question can be asked in two dimensions, an ontological and an epistemological one. What kinds of minds exist and how do we know? (see Dennett 1996). Creatures that exhibit intentional states of mind exhibit perspective. According to Crane (2001, p. 4) “The minded creature is one for which things are a certain way: the way they are from that creature's perspective.” Talking about perspective is talking about how the world is represented for a particular species or individual. Stones, trees, molecules, gamma rays, among other natural kinds, are part of the world along with many other things that exist in our universe. On the other hand, we can say that we humans and other species with a mind have a world. From the point of view of objectivity, although this world is the same for all species, the perspectives along with the cognitive constitution of each species make this world different in many representational respects.

Despite the philosophical divergences around the concept of intentionality, something seems to be mutually agreed among philosophers, the idea that in some measure mental states exhibit intentionality. As we have seen, “hopes,” “desires,” and “beliefs” are examples that show intentional states in an individual, they are intentional dispositions to adopt a certain attitude about something. However, intentionality also has an aspect that is related to our actions. Thus, it is present in our ideas that the most common actions are consciously deliberate. Consequently, the intention to do something manifests itself as an intentional state to act deliberately in a certain way. However, the intentionality described as intentional action reveals itself only as one of the many aspects according to which we can characterize the concept of intentionality.

Searle (1983) discussed the many aspects of mental states that exhibit intentionality and made some distinctions in order not to incur conceptual confusions. According to Searle (1983) and unlike Brentano (1995), only some mental states,

and not all, have intentionality. Searle (1983, p. 1) stated that “Beliefs, fears, hopes, and desires are Intentional; but there are forms of nervousness, elation, and undirected anxiety that are not Intentional.” They aren’t because they don’t have an object. I can wake up depressed on a beautiful sunny day without, however, knowing what exactly I am depressed about.

It is very common for philosophers to maintain an identity between intentionality and consciousness, when in fact they are completely different things. Also, according to Searle (1983) it is not the case that every conscious state is intentional, e.g., the sudden awareness of a pain in the knee. Likewise, not every intentional state is conscious. I may have the belief that “hunger is a problem that has increased during the pandemic,” but so far, I wasn’t aware of this belief because I wasn’t thinking about it. These examples show us that the term intentionality is difficult to grasp and that, in general, there is no consensus among philosophers.

The Science of Intentionality

The idea that intentional capacity is a pervasive feature in the functioning of diverse cognitive systems (human, animal, and artificial) is well established in the sciences of mind and behavior since its foundational landmarks. Throughout the twentieth century, intentionality ceased to be a phenomenon of strictly philosophical interest to become, also, an object submitted to the scrutiny of the empirical sciences. Firstly, it must be pointed out that the contemporary notion of the adaptive role of intentionality for behavior and self-regulation of action is indebted to Edward Tolman’s seminal works on cognitive mapping and latent learning (Tolman 1932; Tolman and Honzik 1930).

In his classic studies with rats in mazes, Tolman showed that under different circumstances the behavior of these organisms was determined by intervening variables that influenced the stimulus-response circuit. Such variables were cognitions organized from a map, a cognitive map, whose function was to structure a behavioral

plan, including the intentions underlying behavior as a central element for action planning and control. At that moment, intentions were understood basically as pre-established expectations responsible for influencing the direction of behavior to the detriment of environmental cues presented to the experiment. That is, by suggesting that behavior can be initiated, sustained, and guided by endogenously self-generated goals (that is, the intentions itself), these findings opposed to the centrality of stimulus-based theories of behavior such as Pavlovian and operant learning in the explanation of the formation of action schemes, highlighting the importance of the role played by cognitive processes (initially conceived as “intervening variables” in the stimulus-response scheme) in the mediation of proper behavioral processes.

Historically speaking, Tolman’s studies on intentional behavior collaborated for the rise of cognitivism as a theoretical paradigm in the study of psychological phenomena in the middle of the twentieth century. In particular, the information processing theories became known for brought a prominent place to the field of intentionality in the explanation of the function and structure of mind. It is worth remembering that in the classic “Plans and structure of behavior,” Miller et al. (2013) argued that intentionality is the process responsible for predictively organizing behavior by computing information about the planning, execution, and optimization of different actions and mental operation in the context of psychophysical (e.g., sensorimotor behavior) and complex cognitive (e.g., reasoning) information processing.

The current science of intentionality is made up of different research programs. In sum, these programs are mostly interested in investigating the neural bases and interindividual recognition of intention and intentionality. Since the 1980s, we had a robust line of studies dedicated to investigating the neural mechanisms responsible for the genesis and support of intentional states. Regarding the dynamics of temporal processing of intentions in the human brain, the now classic studies developed by Benjamin Libet (Libet et al. 1983) demonstrated that a preconscious neural processing precedes the appearance of intention at the level of conscious

processing by an average time of 256 ms. In these studies, the time of brain activity that precedes a voluntary motor action (named readiness potential) was compared with the time reported by the participant, indicating the emergence of a subjective experience of “urge” (the “urging” of volition) to act or stop the intention to act. When comparing the intentional reporting time with the preparation time, it was evident that the onset of intentional brain activity was preceded by a few 100 ms by nonconscious brain activity.

Concerning the spatiality of intentionality in the brain, recent evidence indicates that circuits connecting the prefrontal activity to the pre-supplementary motor area reflect the representation of intentions in the human brain (Lau et al. 2004) as well as those of chimpanzees (Boussaoud 2001). Another well-established research program for the empirical understanding of intentionality refers to the study of its social recognition and interindividual sharing. Such research basically investigates how intentions of possible intentional agents are decoded by external observers and are especially interested in exploring how intentional activity are socially recognized and how the attribution of intentionality is performed by humans and nonhuman animals in the context of social interaction (see Tomasello and Carpenter 2007).

Intentionality, Free Will, and the Possible

From a philosophical and scientific point of view, intentionality is not a theme that develops separately. Even people who do not deal directly with this type of research notice its connection with other logical and empirical problems. There are many possibilities for dialogue with the theme of intentionality. However, perhaps the theme of free will is one of immediate themes when we consider a certain self-determined feature of intentional mental states. In fact, through different circumstances we expect that people be able to switch between different intentional states while exercising their free will, consequently, acting to modify the purpose and consequent direction of their own

actions and thoughts. Therefore, in order to develop a reflection on intentionality and the possible, we will consider the possible as the moderating dimension of free will, thus exercised by the intentional subject during their process of interaction with the world.

Free will is a commonsense notion widely shared among different cultures. It is a basic assumption in understanding the level of autonomy exercised by an intentional agent during the performance of their actions, as well as in the attribution of responsibility to such agents. *Prima facie*, from a pragmatic point of view, it may seem nonsensical to deny that we have free will. We have the feeling that we act freely all the time. However, the free will thesis has been questioned since the dawn of Western thought. Roughly speaking, there are two ways to attack the free will thesis: one logical and the other empirical. The logical form consists of a set of arguments that are known by the term “fatalism” (see Ayer 1973; Rice 2018). Fatalist arguments are not based on any kind of empirical premise; they are therefore *a priori* arguments. It will not be our aim to develop fatalistic considerations about human freedom; we will focus our attention on a brief empirical description.

The empirical form is based on the premise of determinism. According to determinism (also known as causal determinism, see Hoefer 2016) our universe is causally determined by physical laws. Consequently, a mechanistic description of the universe would be incompatible with the notion of free will. Determinism discredits that humans are free to act. Human beings are not themselves the source of their actions. Currently, this notion is based on the postulate that free will is a fiction. Our neurobiological apparatus would be responsible for producing all the processes of the mind, including free will. Endorsing determinism means sharing the belief that our actions are the result of a causal chain that belongs to the distant past. Consequently, individuals themselves would not be the source of the causal realization of their actions. Therefore, this would imply a commitment to the radical thesis that free will and moral responsibility are illusions (see Strawson 2010).

A third alternative to discussing free will is compatibilism. The compatibilist simply denies that there is any incongruity between free will and determinism. Instead, he argues that free will is compatible with determinism (see McKenna 2019). According to this view, for us human beings, no matter how involved we are in a causal chain, there can always be the possibility of stopping our action or choosing between different possibilities of action. In other words, compatibilism starts from the notion that the existence of counterfactuals in our cognitive experience supports the ontological possibility of free will, even in a world that is, at least apparently, physically determined. Thus, thinking and acting based on counterfactuals presupposes an openness to different possibilities of action, whether when the action has already been consummated or is still in the course of being consummated. In this sense, our conviction that we have free will is not so easy to abandon.

Despite being a feasible reality or a useful illusion, the concrete exercise of free will has been investigated as the achievement of actions are, at least gradually, intentionally planned and executed (see Wegner 2002). This type of endogenously guided action, that is, an action sustained by goals previously constituted by the individual, has been specifically called intentional action (see Bonicalzi and Haggard 2019). This variety of action has a different nature from reflex or involuntary actions (which are guided by external stimuli or involuntary reactions to the detriment of self-generated intentions) and constitutes a true locus of intersection between intentionality and free will, since it is an action initiated and guided a priori by the intentions of a subject acting based on their own intentional autonomy.

The forwarding of an intentional action produces in people a certain sense of causal autonomy or a sense of agency that accompanies the self-regulation of intentional action in different contexts (Moore and Obhi 2012). Characterized as the experience of generating effects in the external world through intentionally guided actions, the sense of agency (the experience of intentional action itself) can be attenuated or amplified through the interaction between two

extremes of our reality. On the one hand, we have the extreme of the external world and its factors (e.g., environment, social structure, valence of stimuli, among others), and on the other, the extreme that encompasses the processes of the intentionally sustained action by the agent itself (e.g., volition, beliefs, emotions, neurological dysfunctions, among others) (Haggard 2008). According to a recent view of the compositional character of the experience of intentional action, it is the interaction between various processes crossing the trajectory between these extremes that determines the quality and levels of such experience (see Bonicalzi and Haggard 2019). This conception understands that in the field of action, it is not always possible to have a parallel between intentions and their cognitive or behavioral outcomes, since intentions are constituted at the intersection between intrinsic (beliefs, motives, goals, volition) and extrinsic (environment, social context, norms) factors surrounding the proper experience of intentional action.

From this interactional view, we can infer that both extremes and their processes are capable of differentially and decisively contributing to the construction of the dimension of the possible at the level of intentionality, in general, and intentional actions, in particular. The expressions of the possible would thus involve a wide range of events related to the maintenance or change of the course of intentional actions according to the interaction between the intentional agent and the surrounding world. In this sense, the possible in intentionality would emerge as a space of intersection between objectives underlying the intentional behavior, other individual variables and stimuli brought by the external world. We can suppose that the dimension of the possible would emerge in the continuum of a recalibration of the direction of the subject interaction with their context when the contact with new cognitive information and environmental stimuli are sufficiently capable of producing changes in the scope of its original intentional behavior. Thus, acting as an intentional agent in a complex world would not only involve pursuing goals, but above all, mitigating possible environmental distractors, inhibiting competing internal

intentions, among others. Therefore, we can assume that the field of the possible in intentionality arises as a consequence of the possibility of materializing intentions through action in a multifaceted world, as a space open to novelty in accordance with the different situational circumstances and the subject current state and personal dispositions.

Conclusion

This entry aimed to characterize the relationship between intentionality and the possible. After presenting the state of the art of philosophical and scientific research on intentionality, we propose that the possible emerges in the scope of intentionality through the intersection between intrinsic and extrinsic factors in the consummation of intentions by an intentional agent. We seek to demonstrate that while the first factors are related to volitional aspects typically present in intentionally guided actions, such as causal autonomy and free choice, those of the second type emerge from contextual and socio-environmental events. We argue that it is from the interaction between a subject and a world that the possible emerges in intentional behavior, as a filter of intentional achievement.

Sometimes, when we carry out our goals, we achieve the exact outcomes of our intentions. Sometimes, we can voluntarily change the trajectory of our intentions when inhibiting concurrent intentions or we may simply give up or lose control of our intentions altogether by voluntarily or involuntarily adhering to the stimuli of the context and social environment around us. In any case, the dimension of the possible imposes itself on the dynamics of our intentional achievements when what is pointed out in the agential horizon, in one way or another, is the possibility of going ahead or not with our own intentions.

Cross-References

- [Consciousness](#)
- [Determinism](#)

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Invention

Giovanni Emanuele Corazza^{1,2} and Julia Petra Ariane von Thienen³

¹Marconi Institute for Creativity, University of Bologna, Bologna, Italy

²LaPEA, Université de Paris and Univ Gustave Eiffel, Boulogne-Billancourt, France

³Hasso Plattner Institute for Digital Engineering, University of Potsdam, Potsdam, Germany

Abstract

This entry addresses invention from five different perspectives: (i) definition of the term, (ii) mechanisms underlying invention processes, (iii) (pre-)history of human inventions, (iv) intellectual property protection vs open innovation, and (v) case studies of great inventors. Regarding the definition, an invention is the outcome of a creative process taking place within a technological milieu, which is recognized as successful in terms of its effectiveness as an original technology. In the process of invention, a technological possibility becomes realized. Inventions are distinct from either discovery or innovation. In human creative processes, seven mechanisms of invention can be observed, yielding characteristic outcomes: (1) basic inventions, (2) invention branches, (3) invention combinations, (4) invention toolkits, (5) invention exaptations, (6) invention values, and (7) game-changing inventions. The development of humanity has been strongly shaped by inventions ever since early stone tools and the conception of agriculture. An “explosion of creativity” has been associated with *Homo sapiens*, and inventions in all fields of human endeavor have followed suit, engendering an exponential growth of cumulative culture. This culture development emerges essentially through a reuse of previous inventions, their revision, amendment and rededication. In sociocultural terms, humans have increasingly regulated processes of invention and invention-reuse through concepts such as intellectual property, patents,

open innovation and licensing methods. Finally, three case studies of great inventors are considered: Edison, Marconi, and Montessori, next to a discussion of human invention processes as collaborative endeavors.

Keywords

Invention · Creativity · Invention mechanism · Cumulative culture · Technology · Innovation · Patent · Open innovation

Definition of Invention

In order to define the term invention, it is necessary first to clarify the terms technology, creativity, and creative achievement. The etymology of the term *technology* can be traced back to the Greek word *tekhnologia*, intended as the systematic treatment of an art or a craft, through a system or method of making or doing. It is important to underline that the Greeks included both the arts and crafting tools within the realm of technology. According to Corazza and Lubart (2020, p. 2), *creativity* is defined as “a context-embedded phenomenon requiring potential originality and effectiveness.” This is an evolution of the dynamic definition of creativity recently introduced (Corazza 2016), indicating that the creative process involves a search for potential originality, which subsumes the concepts of novelty, non-obviousness, and authenticity as well as potential effectiveness with respect to a specific domain of knowledge, which could correspond to a technological field, but not necessarily so. Creativity can also involve intangible ideas in abstract domains of thought. For an actor to be creative, it is not necessary to be successful in finding originality and effectiveness, but it is sufficient to pose a challenge to the state-of-the-art: the bolder the challenge, the higher the potential. It is possible for this potential to remain unexpressed, latent, or unrecognized: in this case the process remains in a state of *creative inconclusiveness*, which is a key part of the dynamic creative process (Corazza 2016, 2019, 2020; von Thienen et al. 2017). On the other hand, in relatively less frequent occasions the potential becomes realized and

outcomes of the creative process are appreciated within a cultural context: the process enters a state of *creative achievement* (Corazza 2016, 2019, 2020).

Invention can be defined as a form of creative achievement in a technological context. Therefore, invention is an outcome of a creative process taking place within a technological milieu, which is recognized as successful in terms of its effectiveness as an original technology. In other words, an invention involves bringing into existence a device, an object, a procedure, or a system that possesses characteristics of both originality with respect to already existing state-of-the-art solutions and effectiveness in terms of performing functions in a specific field of technology. Technology and invention can be discussed also from the point of view of nonhuman species (Kaufman and Kaufman 2015). In this entry, we concentrate on the human side of these entities.

When technology is man-made, so is invention. Therefore, invention is clearly distinct from scientific discovery, which involves the observation of nature and the identification of its characteristics in terms of laws, theorems, and mechanisms (Corazza and Agnoli 2018). All that is discovered in nature exists even without the intervention of the human species. All that is invented would not exist without someone's intervention.

It is also important to distinguish between invention and innovation. An invention is the outcome of a creative process, which can remain an idle outcome that does not get used in real life. In this case, the invention does not produce innovation, at least for the time being. Innovation occurs whenever an invention is exploited in real life. Very often, long time spans separate invention from innovation, such as several hundred years before an invention actually gets used in society and thus brings about innovation (Rhodes 1961). On the other hand, an innovation does not necessarily require an invention: for example, a company can undergo a process of innovation through reorganization (managerial innovation) or introducing new technologies, which are only a local novelty, as they already exist in other companies.

An invention can become a form of intellectual property when it is possible to uniquely identify the mind that carried out the creative process, where a mind can refer both to an individual or an organization. Fencing intellectual property becomes increasingly difficult the more the invention emerges from a process of co-creation.

Mechanisms of Invention

Creativity episodes are not only engendered by *Homo sapiens*, our current species. They can be found in hominin history, as well as in the so-called “biological and material layers of complexity” (Corazza 2019; Corazza and Lubart 2020). All creativity episodes are in some way concatenated, thus forming a *Dynamic Universal Creativity Process (DUCP)*, whose origin can be traced back to the Big Bang (Corazza 2019; Corazza and Lubart 2020). Since inventions are creative achievements in technological work domains, it is possible to study the specific fragment of the DUCP concerned with human technology. Looking through the history of hominin inventions, recurrent processes become evident, which we identify here as “mechanisms of invention.”

A notable characteristic of hominin inventors is that they achieve high levels of complexity and performance in novel products by reusing past inventions. Over time the creativity episodes of different inventors are concatenated, yielding a phenomenon called “cumulative culture” or “ratcheting”:

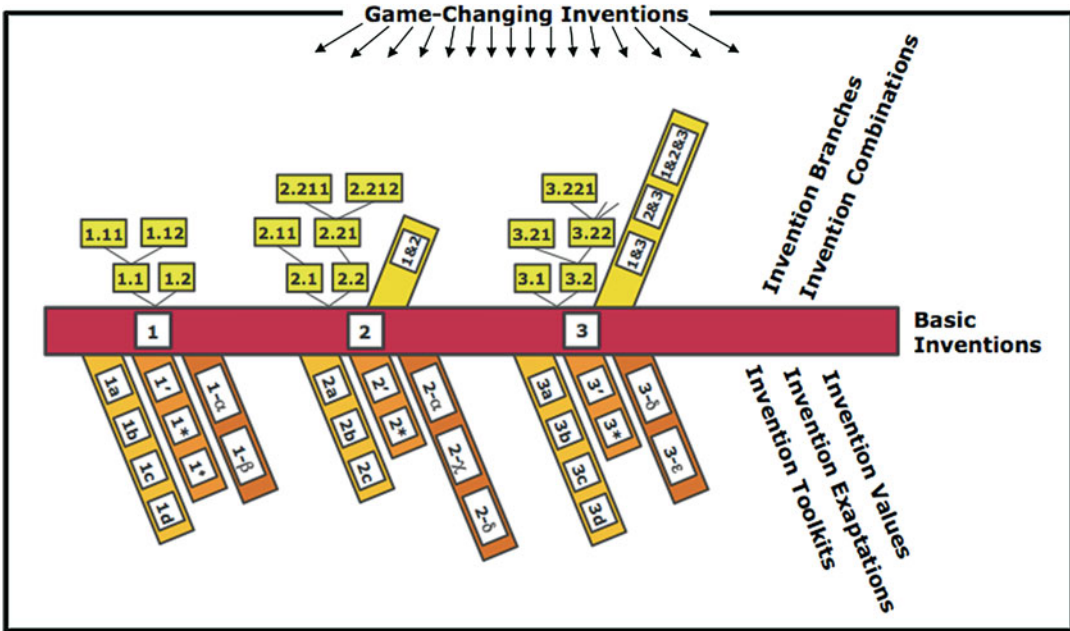
- In a resource-intensive process, *inventor A* develops an invention.
- *Inventor B* picks up *A*'s invention without investing many resources. Therefore *B* can spend his/her time and energy on further advancements in the field, engendering another, yet more complex and/or effective invention.
- After a while a level of sophistication is achieved that no single inventor could achieve alone, if starting from the origin, with *A*'s cultural resources.

Importantly, the process of invention – the creative process – tends to be time-intensive and strenuous. Before an invention finally succeeds, long phases of work are typically required where the inventor faces *creative inconclusiveness*. During these early phases, ideas and prototypes appear to be lacking in terms of originality and/or effectiveness, so the process needs to continue, before an invention can be claimed and released. Because creative processes take time and perseverance, even smart individuals cannot conceive mankind's sophisticated inventions from scratch in a single lifetime. To progress on the ladder of cultural ratcheting, inventors need to start from high-points of already available culture, generated very often over multiple generations of previous inventors.

Thus, the potential for future inventions in a community hinges in large part on past inventions. In other words, there is a sequential dependency effect (Altman and Mesoudi 2019; von Thienen et al. [in press](#)). For instance, the Internet could not have been invented without prior inventions of electrical power networks, telecommunications, and computer technology. For future prospects this means that every new invention increases the number of inventions that are likely to follow in the community, the performance of subsequent inventions (according to given criteria or development goals) and they provide trajectories for further developments, thus defining novel design spaces where future inventions can be expected. To shed further light on these dynamics, basic operations or mechanisms can be differentiated, which resurface in human invention processes, as represented in Fig. 1 (for related models, see Kolodny et al. 2015; von Thienen et al. [in press](#)). The use of these operations or mechanisms also shapes the potential of individuals and communities to make further inventions.

- (i) *Basic Inventions* are created (see boxes 1, 2, 3 in Fig. 1). For instance, in the prehistory of humanity, stone tools have been conceived. There was the invention of agriculture and wheels. Drive systems were developed based on horses and ox at earlier times, while later the motor was invented.

- (ii) Basic inventions evolve into *Invention Branches* (e.g., see boxes 1.1, 1.11, 1.12 in Fig. 1). These branches exhibit two major characteristics: diversification and refinement. For instance, motor technology has diversified into different lineages of steam, diesel, petrol, electro, and hydrogen technology. Refinement means that solutions become more effective over time – in light of a continuous value or development goal. For instance, automobile engines invented around the year 2000 had more horsepower than automobile engines invented one hundred years earlier.
- (iii) *Invention Combinations* emerge (e.g., see boxes 1 & 2, 1 & 3, 2 & 3, 1 & 2 & 3 in Fig. 1). For example, modern automobiles combine earlier inventions of wheels and motors. Numerically, with every new invention that becomes available in a community, the number of possible invention combinations that the community can probe increases factorially.
- (iv) *Invention Toolkits* get developed (e.g., see boxes 1a, 1b, 1c, 1d in Fig. 1). Toolkits serve to render the application of a basic invention more convenient and/or effective. For instance, when agriculture was conceived, toolkit-inventions such as ploughs and water management followed suit. Often the success of a basic invention depends on the emergence of a respective toolkit. Without the toolkit, typically the basic invention introduces a lasting usage possibility, but cannot be implemented and sustained for long.
- (v) *Invention Exaptations* develop (e.g., see boxes 1', 1*, 1♦ in Fig. 1). Novel uses are found for already existing technology, which can be identified as exaptations (Corazza 2019; Gould and Vrba 1982). Thus, past inventions obtain novel functionalities. Technically, design principles of earlier inventions get reused in different contexts. For instance, a basic principle of wheels is that there is something spinning around an axis. This principle can be reused to invent a windmill.



Invention, Fig. 1 Mechanisms that underlie human inventions, cumulative culture and ratcheting

(vi) *Invention Values* are extracted, maintained, or dynamically changed (Corazza 2016; von Thienen et al. [in press](#)), (e.g., see boxes 1- α , 1- β in Fig. 1). Inventions convey values and elicit value reflections. When values stay constant, trajectories of invention development are stable and incremental innovation is stimulated. Thus, in the twentieth century the automobile industry that constantly valued maximal horsepower produced incrementally innovative automobile engines. Novel motor inventions resembled past motors, only details were changed and horsepower increased. By contrast, when values change, disruptive innovation gets stimulated. The search space for novel solutions opens up and inventions in many different directions get probed. For instance, in recent years, the value of eco-friendly solutions became prominent. This did not only open up the search space from existing automobile engines to radically different motor technologies, but even novel mobility solutions beyond automobiles became sought with ample efforts. Notably, values can

inform creative developments in more than one knowledge field; e.g., the value of eco-friendly solutions can shape creative processes in domains as different as the automobile industry and agriculture. It is also possible that novel inventions cause societal value changes and disruptive innovation follows suit. For instance, pioneers of modern art invented novel painting techniques based on abstract representations. Their personal values informing the inventions became more broadly accepted over time and thus a novel art epoch was inaugurated.

(vii) Finally, inventions can be used as game-changers, to facilitate creative developments in the future. For instance, the inventions of writing and the printing press were game-changers for subsequent creative developments (Kolodny et al. 2016). With printed records, every new invention can be documented much better and knowledge about inventions can be communicated across more individuals. Thus, there is much less knowledge loss over time.

Subsequent generations of inventors benefit more from inventions that had been made in the past.

Inventions Across Human History

The history of hominin inventions begins with the outset of cumulative culture. It is a history that goes back to times when the *Homo sapiens* was not yet existing, and other hominin species populated the Earth. Archaeological records indicate that the onset of hominin cumulative culture occurred already millions of years ago (Enquist et al. 2008), evidenced by basic inventions evolving into invention branches, ever more diverse and refined over time.

Stone tools are among the earliest hominin inventions. Specimens found at Lomekwi 3 in Kenya have been dated as far back as 3.3 million years ago (Harmand et al. 2015). Over several million years, hominins have invented an exponentially increasing number of different stone tools in a continuous process of diversification: While in the Oldowan period, about two million years ago, hominin inventors seemed to produce less than 10 different kinds of stone tools, in the Upper Paleolithic, beginning roughly 50,000 years ago, hominin makers had invented about 70 different types of stone tools (Lehman 1947; Enquist et al. 2008). While early on hammer and chopping stones were used, later more diverse stone tools were invented, including bracelets, axes, polishing tools, and harpoons. Along with diversification, refinement occurred. Early chopping stones were much rougher than its sophisticated counterparts two million years later. This improvement was rendered possible by ever more refined technical strategies in the production of stone tools (Stout 2011). Some of the increasing sophistication can be understood in light of a continuous value of surface smoothness, so that over time stone tools showed reduced rates of accidental irregularities.

Another early invention in humanity's (pre-) history was agriculture, ca. 12,000 years ago. It entailed huge changes to physical and social environments (Altman and Mesoudi 2019). Notably,

agriculture increased food availability, which allowed population sizes to increase. This, in turn, permitted a greater diversification of societal roles and knowledge domains. With each new knowledge domain, the cultural "raw material" for subsequent inventions increased.

Another important field of creativity was law, which is closely linked to the emergence of civilizations – known hotbeds of invention. Laws had already been invented several thousand years BC, as documented in Ancient Egypt. Important further developments were made, for instance, in the Roman Empire, where detailed rules were developed by professional jurists, and sophisticated forms of codification were engendered.

On a coarse glance the pace of innovation seems to be increasing exponentially over time (Enquist et al. 2008). However, on a closer look there are phases of slow change or continuity, intertwined with phases of "creative explosions," where numerous novelties emerge in short order (Kuhn 1962/1970; Kolodny et al. 2015; Kuhn 2012). The Industrial Revolution beginning in the eighteenth century has been such a creative explosion. It was a period of transition from hand-production methods to increasing automation and use of machines. It brought about novel business organizations such as mechanized factory systems, next to novel social roles and professions. Like the invention of agriculture, the industrialization had a huge impact on demography. Due to the increased availability of everyday supplies through automated production, population sizes increased drastically. Once again, greater numbers of people imply a greater potential for knowledge diversification – one driving factor of cumulative culture.

Intellectual Property Protection Versus Open Innovation

In the realm of socio-legal frameworks, key inventions have been made to guide the publication and reuse of inventions. Thus, processes of ratcheting and cumulative culture development were not left to chance or dynamics of nature any longer, but became regulated in terms of

permissions and prohibitions. Within law, rubrics emerged that concern invention in a straightforward way, as they address questions of intellectual property. In socio-legal realms, conceptual developments included patenting, copyright, open innovation, open content initiatives, and Creative Commons licenses.

A patent is a form of intellectual property. It gives the patent owner a time-limited right to exclude others from any commercial use of the invention, including producing, selling, offering for sale, and importing. The patent owner can grant such rights to others, usually based on remuneration. To obtain a patent, first, the invention must relate to patentable subject matter. E.g., if a plant shall be patented it must not be a naturally occurring plant but a plant with traits produced through technical means (Metzger and Bartels 2018). The invention must also be novel, nonobvious, and susceptible of industrial application. Second, the invention must be disclosed and published. Patent protection serves to ensure that creative processes “pay off” for the inventor, specifically when (i) creative achievement is extremely resource-intensive to produce, while (ii) resulting inventions can be copied easily by others. For instance, the development of a novel and effective medication may need the work-time of many researchers in a company, costly equipment, and hundreds of test patients. However, once the company has found an effective recipe, other organizations might copy the product easily. Moreover, since these other organizations had no costly research to inform their pricing model, they might sell the product for a lower price, so that the inventor-firm would barely benefit from their creative work. Thus, securing benefits for the inventor in case of creative achievements is one key political approach to foster cost-intensive creative developments. Historically, early patent systems were already used in Ancient Greece. The Venetian Patent Statute of 1474 is regarded as the first statutory patent system.

On the other side, inventors can also have straightforward interests to spread their solutions, instead of selling a limited number of usage-permissions. For instance, the quality of

scientific work is often measured by numbers of citations, so scientists benefit when they render their inventions of methods, concepts, and theories openly available for others to cite and reuse.

In the pursuit of *open innovation*, companies engage in idea exchange with other companies and creative customers. Thus, a wider range of expertise, manpower, and creative-collaborative enthusiasm can inform developments. The creative potential of a population increases with numbers of ideas that are available for recombination (cf. mechanisms of invention), and with different minds, perspectives, and expertise that come to play together. Therefore, involving more persons with varied backgrounds in creative processes by means of loose collaboration networks increases the creative potential of the overall group and individuals herein (Derex et al. 2016; Dean et al. 2014).

Creative Commons licenses provide tools for the sharing and reuse of creative works. By means of standard license agreements, authors can allow the public to reuse creative works in ways that normally would be prohibited due to copyright protection. Different licenses are available, so that authors can communicate specifically which rights they reserve and which rights they waive. While copyright law itself is a relatively recent legal development, emerging in statutory terms only after the invention of the printing press, the development of Creative Commons licenses is an even more recent phenomenon with the charitable organization issuing these licenses founded in 2001.

Overall, socio-legal systems that guide cumulative culture development and ratcheting have themselves undergone processes of cumulative culture development and ratcheting. Human cultures are thus changing parameters of their own development, organizing and reorganizing concatenations of invention from scratch. In a straightforward sense, what is possible for inventors in a society depends on the state of culture development in that society, including legal regulations that permit or prohibit the reuse of other people’s ideas. One next step will be to address the difficult regulation of intellectual property produced by artificial intelligence.

The Mindset of Great Inventors

When dealing with inventions, important lessons can be drawn from eminent examples of the past. One of the world's most famous inventors is Thomas Alva Edison (1847–1931), who was awarded over a thousand patents in his lifetime (Wills 2007). He vigorously thought about applications of physical phenomena such as electricity and electromagnetism to provide novel products and services, leading him to make ample contributions in fields such as mass communication, energy supply, sound recording, and motion pictures. In his work, he followed a structured process of trial and error, where many different combinations and setups were probed. His creative processes often endured for long times, and it was perseverance that rendered creative achievement possible in the end. One example is Edison's invention of an early version of a light-bulb. It is reported how "in his search for the best material out of which to make his incandescent filaments, he tried over sixteen hundred different materials, even including Limburger cheese" (Arnold 1959/2016, p. 73). The immense workload of such creative processes was mastered by Edison together with large teams. While Edison's staff sometimes expressed frustration after numerous unsuccessful trials, he highlighted the knowledge gained in the process and that continued exploration would be the route to eventual success. Edison's approach to invention is thus a key example for long phases of *creative inconclusiveness* prior to eventual achievement. His case also shows how a clear cognitive model of the creative process can be game-changing. Without his understanding of how to conduct creative processes, what difficulties to expect along the way (such as numerous failed trials and ensuing frustration) as well as means to overcome the difficulties (perseverance and learning from failure), Edison's portfolio of inventions would not have emerged as it did.

Another notable case is that of Guglielmo Marconi. Since he was an adolescent, Marconi developed the vision of working as an inventor. Backed by his family and supported by a personal tutor, he pursued education in early applications of electromagnetism, the "hottest" technical topic at the end

of the XIX century. Notably, Marconi never attended a university, which adds to his merits in being awarded a Nobel Prize in physics in 1909. When he performed his first experiments that would lead to the invention of wireless telegraphy in 1895, Guglielmo Marconi was just a 21-years old young man playing around with ideas at Villa Griffone, near Bologna (Italy). The ensuing history of the refinements of his invention was driven by the quest for ever-longer distances of end-to-end communication, up to the triumphant crossing of the Atlantic Ocean on 12 December 1901, when Marconi was 27-years old. This transatlantic experiment was carried out against the solid opinions of leading mathematical-physicists of the time, who presumed to have proven that this transmission was impossible. What nobody knew, including the young Guglielmo, was that the Earth is surrounded by the ionosphere, a layer of plasma generated by the impact of sun energy onto our atmosphere. It is often true that, for disruptive inventions, intuition comes before proof. Marconi went on to develop many other applications of radio transmission, including broadcasting, radio navigation, directive antennas, and he developed in 1935 a clear vision of what would become personal communication technology in the future. Great inventors are often able to read further into the future than others. At the time of Marconi many scientists and technologists worked on radio devices. What distinguished him from others was his vision for the overall system and its innumerable applications, which he successfully pursued as a young entrepreneur.

We finally consider the case of Maria Montessori, which is of interest not only for the outcomes of her creative processes, but also for the obstacles she had to overcome. Born in Chiaravalle (Ancona, Italy) in 1870, she faced strong societal expectations as a woman in the Italian society of the nineteenth century. However, early on she showed a unique determination to pursue scientific studies and a respective career. Resisting different forms of discrimination, she achieved a degree in medicine, specializing on neuropsychiatry – the first woman in Italy in this field. Her attention turned to poor children, who at the time could not receive an education and therefore grew up in analphabetism, developing social inaptness,

so much so that many of them ended up hospitalized in psychiatric institutions in their childhood. In the “Quartiere San Lorenzo” of Rome, Maria Montessori built “La Casa del Bambino,” an institution devoted to the education of these neglected children. Here she invented, probed, and refined educational tools that would later become an integral part of the Montessori Method. These inventions were disruptive as they countervailed traditional educational methodologies. At first they were received with skepticism and scorn. But Maria Montessori achieved outstanding results: Thanks to her new educational methodology, poor children – considered “insane” before – were able to successfully pass the exams for the primary school license, which had been thought impossible by many contemporaries. The tools and the class environments that Maria Montessori invented anticipated by several decades modern theories of embodied and embedded cognition, a further testimony to the observation that a great inventor is typically also a great visionary.

Case studies like these elucidate recurrent characteristics of inventors, which often include boldness, vision, intuition, and perseverance. Such observations fall well in line with analyses of creative processes. Widely recognized human inventions tend to be complex and, by definition, inventions are novel, which means that inventors need to explore and build up novel terrain. Creative processes are therefore learning journeys and inventors need an empowering mindset to endure (usually long) phases of *creative inconclusiveness*, where their work domain contains many ambiguities, first trials fail and society may react with skepticism or mockery – prior to creative achievements. Here the inventor’s mindset is among the core determinants of what becomes possible for the person.

While such individual journeys of invention can be studied and analyzed, it is clear at the same time that creativity episodes of different human inventors are concatenated. In this sense, later-coming inventors typically do not develop everything from scratch, but they rethink and recombine many inventions made by others before. Invention as observable in hominins, with notable trajectories of cumulative culture development, is essentially collaborative. In this sense, there is an

implicit collaboration between later-coming inventors and their predecessors. Moreover, many inventions are straightforwardly produced through collaboration – as in the case of a space rocket, where the overall invention could only be produced collaboratively, with many team members contributing smaller-scale inventions concerning parts of the system. Collaboration and the concatenation of creative processes enable highly complex and sophisticated inventions that go beyond the inventive abilities of a single person.

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Irony

Michael Hanchett Hanson
Teachers College, Columbia University,
New York City, NY, USA

Abstract

Irony has been conceived and studied in different ways across history and disciplines – as a trope, sensibility, stance, cognitive structure,

and worldview. Some philosophies have argued that irony is at the heart of all meaning, a way of overcoming limitations of meaning through those very limitations. These various concepts have, in turn, defined multiple and complicated relationships to people's conceptions of the possible. Irony can undermine rigidity, hypocrisy, blind faith, and other knee-jerk responses, thereby opening new conceptual spaces. Irony preys on excesses of all sorts, though, including the irrational exuberance that can accompany new possibilities and any claim to certainty about the future. In these dual opening and constraining functions, irony can enhance other thought processes and, in some cases, provide a logic of its own in producing new ideas.

Keywords

Discursive communities · Final vocabularies · Irony · Literature · Philosophy · Postmodern irony · Romantic irony · Situational irony · Verbal irony · Worldview · Zeitgeist

In 1729, Dr. Jonathan Swift published *A Modest Proposal For preventing the Children of Poor People From being a Burthen to Their Parents or Country, and For making them Beneficial to the Publick*. After describing the desperate plight of the poor and starving in Ireland, Swift describes his “solution”: the Irish should sell their children as food. “A young healthy child well nursed, is, at a year old, a most delicious nourishing and wholesome food, whether stewed, roasted, baked, or boiled; and I make no doubt that it will equally serve in a fricassee, or a ragoust”. The essay goes on at length concerning the practical and statistical advantages of the proposal, skewering English attitudes toward the Irish and class divisions – “I grant this food will be somewhat dear, and therefore very proper for landlords, who, as they have already devoured most of the parents, seem to have the best title to the children” – while parodying the social-engineering solutions to economic problems in vogue at the time.

In early times, all stories belonged to the sky god Nyankonpon. But the spider Anansi wanted

the stories and asked to buy them. Nyankonpon laughed because many great cities had tried to buy the stories and could not. A mere spider could never pay the price, which was a python, a leopard, wasps and a fairy. But Anansi consulted his wife, Aso, and the two found ways to outwit all of these prizes, using the victims' vanity and/or their own power against them. Anansi bound them in his web and delivered them to the sky god. Thus, stories became known as spider stories. One of them is this story.

(Summary of Ashanti myth. See, for example, Rattray 1930)

Scholarship on irony spans several disciplines and a wide range of definitions. Irony can be seen as a trope, sensibility, stance, cognitive structure, worldview, and/or a dynamic of meaning in general. All conceptions, though, involve the possible.

- *Multi-perspective structure.* Most fundamentally, irony tightly juxtaposes alternative ways of seeing a situation, establishing that there *are* multiple points of view. Among those views, irony undermines the assumptions or certainties held by at least some people. In practice, this redirecting of attention can range from gentle prods toward the more complex to derision of the foolish. Ironic ways of seeing a situation or the world in general can, thus, contribute both to the perception and production of new perspectives, even as the judgmental edge of irony undermines the validity of others.
- *Social dynamic.* Irony is social, both reflecting and recruiting to discursive communities. Winking is not enough. Someone has to “get” the irony (us – both reflecting communities and recruiting to them), and someone is always a victim or target (them). Both roles construct community boundaries. Even private appreciation of irony situates the one perceiving the irony in imagined relation to differing communities of knowledge, practice, and/or values.
- *Ongoing dynamic of meaning.* Irony is not necessarily an isolated view amid a sea of analytic arguments, sincerity, and convention. Irony has also been conceived as fundamental

to all meaning and/or as a way of surmounting the inadequacies of language and other representational systems (e.g., Rorty 1989; Schlegel 1798–1800/1991). In the process, irony continually redirects attention to the more general and abstract, an ongoing surmounting of ironies on top of ironies.

In all three of these conceptions, the ironic stance to the world is linked to the possible as an exceptional event within, or as a condition of, meaning.

A Working Definition

Amid the diversity of perspectives and categories, patterns of consensus have emerged. Taking into account a wide array of scholarship (including, Colebrook 2004; Hutcheon 1994; Lucariello 1994; Meucke 1969/2020; Wilde 1981), irony can be defined as *seeing a situation in particular ways that emphasize contradiction or incongruity with a judgmental edge*. These views of the situation match types of circumstances that are socially recognized as ironic (situational irony), and people may reference such situations through juxtapositions of literal and intended meaning (verbal irony). The judgmental edge orients the stance away from the perspectives targeted by the irony and, implicitly or explicitly, toward other views. Seeing the irony requires sophistication (Hutcheon 1994; Meucke 1969/2020), meaning that irony is built on knowledge of context and expectations, and greater knowledge of relevant history, conventions, nuance, social dynamics, and so on tends to afford greater possibilities of irony.

A particular irony may, then, be seen as anomalous to broader experience – hypocrisy, foolishness, or *schadenfreude*, for example – or indicative of broader reality – cosmic, existential, romantic, or postmodern irony. Consider, for example, a few famous ironists: Lao Tzu, Socrates, Jonathan Swift, Rabindranath Tagore, George Bernard Shaw, Jane Austen, Virginia Woolf. Some consciously embraced a form of irony as worldview – Lao Tzu's view of the Tao as

constant flux of opposing forces (yin and yang) or Socrates's insistence on ignorance as the path to wisdom. Others may simply perceive and emphasize irony often as in Swift's attacks on hypocrisy and foolishness or the plot twists in Tagore's short stories or Austen's critiques of English manners. Sometimes, the specific and general mix, such as Woolf's use of irony in relation to gender and sexuality, targeting specific beliefs and practices, presented with ironies of consciousness itself in her literary style. And, sometimes, the specific leads to the general as in Shaw's view of World War I as the product of foolish politicians in 1914 but as an example of inevitable ironies of nature at the end of the war (see discussion below).

Typological Controversies

The working definition above is intentionally broad, and a range of theorists would agree with it in large part. But when those theorists get to detailed typologies – and they often do – there is still plenty of room for disagreement. Sarcasm – saying the opposite of what is meant with strong condescending affect – may be treated as central to the idea of irony because it is marked so obviously or as a limit case because of the same lack of nuance. Paradoxes, loops where ideas lead to contradictory, absurd, or impossible conclusions (e.g., “this statement is false”) may also be classified as a limit case of the larger category, irony, or as a related but separate phenomenon. Satire and parody are often treated as literary genres for which irony is the central trope but can also be cited as simply examples of the, again, larger category of irony.

Multi-Perspective Meaning

One of the most influential of such typologies has been D. C. Muecke's *Compass of Irony*, originally published 1969 and republished in 1980 and 2020. Muecke began by describing irony as being like mist, easy to see but too nebulous to take in hand. He, nevertheless, took on the task with gusto, providing one of the most comprehensive typologies of irony in the field. His general definition of the topic was “a double-layered or

two-story” (op. cit., p. 19) structure of meaning in which the levels of interpretation of the situation are opposed as “contradiction, incongruity or incompatibility” but a “victim is confidently unaware of the very possibility of there being an upper level or point of view that invalidates his [sic] own or an ironist pretends not to be aware of it” (op. cit., p. 20). Muecke, thus, began with multiple perspectives on meaning and the social dynamic – victim and ironist roles.

He went on to define the three broad categories in his typology which were cited in discussion of the working definition, provided earlier: general irony, such as cosmic irony, and two types of specific irony, situational and verbal. Romantic irony (irony as dynamic of meaning) was his fourth large category. The typology included five types of situational irony (simple irony of incongruity, irony of events, dramatic irony, irony of self-betrayal, irony of dilemma), three grades of verbal irony (overt, covert, private), four modes of verbal irony (impersonal, self-disparaging, ingenu, dramatized), and five types of general irony (general irony of events, general dramatic irony, cosmic irony, ironies of inevitable ignorance, ironies of art). Muecke emphasized, however, that all irony ultimately refers to situations and concluded that, whatever form irony takes, it reflects a stance toward the world.

Breadth of Function

Many later theorists cited Muecke, and a number considered one or more specific aspects of his typology for further focused analysis. The primacy of situations to all forms of irony has been a particularly rich insight for elaboration by others. For example, Muecke noted that, not only is all irony ultimately grounded in perception of situations, with sophistication a viewer may be able to see any situation as ironic. There is latent irony in any experience. Linda Hutcheon (1994) built on this insight in her analysis of how “irony happens” (op. cit., p. 12). With sufficient knowledge of any situation, the perceiver may see irony. Irony's judgmental edge can then serve many purposes, depending on context and intent of the

ironist, such as aggregative (helping define communities, emphasizing inclusion or exclusion), oppositional (from transgressive, subversive to insulting), provisional (from demystifying to duplicitous), distancing (from offering new perspectives to being indifferent), complicating (from introducing rich complexity to misleading through imprecision or ambiguity), and so on. In each of the functions listed above, the emphasis tends toward finding new possibilities at one end of the scale and foreclosing possibilities at the other. Even the erudite insult or obfuscating ambiguity can, however, suggest new orientations. The functions of irony are both highly contextual and dynamic, seldom affording hard-and-fast rules.

Scripts and Expectations

Joan Lucariello (1994) also built on Muecke's point about the situational anchoring of irony. She examined irony as a socially learned, conceptually coherent way of understanding certain types of script anomalies. Jean Piaget (Gruber und Vonèche 1995) and other theorists (e.g., Schank und Abelson 1977) have found that people learn concepts and behaviors in schemas or scripts. Normally, one thing follows another in a predictable sequence with concepts related to one another in conventional ways. For example, going to a fast-food restaurant usually follows a predictable script, such as standing in line, ordering from a counter, paying, picking up the food, and seating oneself. In a fine dining restaurant, the roles, events, and order are different.

Lucariello asked subjects to produce accounts of specific types of ironic situations, adapted from Muecke's typology, and to categorize ironic situations they were given. From that research, she concluded that situational irony constitutes a distinct event-based knowledge, linked to the non-ironic scripts as deviations. Ironic scripts, however, match learned types of conceptual coherence that distinguish them from simple anomalies. Note also: sophistication is still necessary. The person must know both the non-ironic script and the type of ironic deviation to perceive the irony.

Ironic Logic

Lucariello's work helped establish the conceptual coherence of irony, but her experiments looked only at isolated examples of irony. What happens when that conceptual coherence influences a larger system of thinking, such as a person's point of view, over a longer period? There, irony can produce its own logic. Once one part of a script is flipped, perception of possible outcomes can change, which then affect other scripts for which those outcomes are context. In addition, the later events are also subject to ironic twists to their scripts.

For example, war is conventionally seen as a conflict between different nations, against *other* people, in which one side wins and the other loses. In the first months of World War I, Bernard Shaw (1914/1931) twisted that script in a number of ways as he thought through the short-and long-term consequences of the conflict. His long essay, "Common Sense about the War," used irony at almost every turn (Hanchett Hanson 2004, 2005). The English had for generations been taught to hate German *Junkers* – aristocrats – but no place produced aristocrats as well as England. Indeed, the British royal family were not just aristocrats like the German Junkers they were fighting, the British monarchs *were* German Junkers (the British royal family changed its name from Saxe-Coburg-Gotha to Windsor during the war because of the embarrassing irony). Once the soldiers understood that their enemy was not another nation but a class system, in an "ecstasy of commonsense" (Shaw 1914/1931, p. 20), they should throw down their weapons and go home to start a revolution. That outcome was unlikely, and did not occur. Using similar ironic logic, though, Shaw produced in "Common Sense" a work of amazing prescience. At a time when many thought the fighting would last only a few months, he predicted a long and bloody war that would only be resolved when America joined the fight. He predicted a second war if the terms of peace were not just and that the longer-term enemy of Western Europe would be Russia, not Germany. Shaw also prescribed a mutual defense alliance between Britain, France, Germany, and the United

States as the means to enduring peace in Europe: an outline of what would be the North Atlantic Treaty Organization (NATO). All of that would come to pass later. By the end of the war, though, Shaw (1919) himself had changed his ironic perspective. Taking the view of cosmic irony, he came to see such disasters as inevitable outcomes of human nature, which included his own political work before the war. He was still an ironist but through further ironic logic had come to a different point of view concerning causes and effects.

Social Dynamic

Roles and Expectations

Irony is grounded in the perception of situations, as described above, and the ironic twist to a situation brings with it specific roles. In ancient Greek theater stock characters included the *eiron* and the *alazon* (Frye 1957; Muecke 1969/2020), the latter, exhibiting overconfidence ranging from naiveté to arrogance to buffoonery, was the prey of the former who burst the bubble of unrealistic expectations. Someone, at least in concept, must hold such expectations. Someone must slyly point out the naiveté, rigidity, hubris, folly, illogic, and so on, and someone must get the irony. The roles victim(s), ironist, and audience are not always different people, however. For example, in self-deprecating irony, the ironist and the victim are the same person. In cosmic irony, the victims and audience are the same, with the dynamics of life itself being the ironist, pulling the rug out from under expectations. When one person uses irony in a conversation with another, the victim may not be actually present but believed to exist. A person quietly savoring an irony, without saying anything, imagines that at least some other people would also appreciate the irony and that the victim and others of that ilk would not.

These roles, built around expectations, realities, and differing levels of sophistication, must also involve conflicting views of possibility. But the ironist's judgment is not necessarily right. In the long term, the victim may get the last laugh. Such failure of the ironist position can, however, be seen as further irony, an indication of how far

the ironic perspective can go (the dynamics of meaning, discussed later).

Discursive Communities

In keeping with the criteria above, irony can also be seen as defining the background assumptions of a community or political position. This was another point that Hutcheon (1994) emphasized. The sophistication that allows irony to “happen” is not simply individual but comes from membership in discursive communities. Hutcheon used examples of perceiving irony in art and music where knowledge of the history and traditions of the art forms – being part of those discursive communities – lead viewers to see ironic references. Note that, here, irony is still anomalous, not a view of how the world necessarily works, but can become plentiful in the aspects of the world where people have sufficient contextual understanding. Similarly, Dannagal Goldthwaite Young (2020) has argued that irony and outrage play parallel roles in managing frustration – and, thereby, characterizing communities – the left tending toward irony and the right, toward outrage in current American political discourse.

Zeitgeist and Worldviews

Lucariello helped establish the principle that at least some forms of irony can be socially transmitted – learned – and Hutcheon and others have looked at how irony defines discursive communities and recruits people to them. It is not surprising, then, that irony can help define a sociohistorical period or *zeitgeist*.

An influential analysis of ironic *zeitgeist* was Northrup Frye's (1957) literary criticism. Frye's broad views of irony were part of his larger challenge to the focus of the New Criticism movement on works as purely aesthetic-linguistic objects outside of historical context. Elaborating on Aristotle, Frye analyzed narrative modes according to the relationship of the protagonist to nature and other people, positing a historical cycle from dominant mythic modes (gods above nature and people in kind) to romantic (heroes above nature and people in degree) to high mimetic (the extraordinary hero but often with a fatal flaw – subject to nature but greater than other people in degree), low mimetic

(the everyday person), and ironic (protagonists presented as less than other people, underdogs, such as the film noir detective). Although only one of the modes is labeled ironic, defined by context and tone rather than linguistic wit, Frye saw irony as also important in the other modes. For example, *lack* of irony makes the death of the romantic hero, like Beowulf, elegiac – heroism without irony – but the fall of the great high-memetic hero is necessarily “ironic in reference” (op. cit., p. 37). The narrative emphasis of his own time in the mid-twentieth century was ironic, but within this mode was the re-emergence of the mythic in works (ironic myths) like those of Franz Kafka and James Joyce.

For Frye, the mimetic and ironic narrative modes were modern, but his focus was not specifically on the break in sensibility characterized as modernism or the generation of postmodern responses. Other theorists have placed particular importance on these breaks in relation to irony. For example, Shaw was not alone in applying irony to World War I. Analyzing World War I memoirs, Paul Fussell (1975/2000) has argued that the Great War marked a general shift in modern consciousness from one of a “Meliorist myth” (op. cit., p. 8) of progress to irony as the “dominating form of modern understanding” (op. cit., p. 35). Although he described the irony that came out of the war experience as modern, Fussell was also analyzing the path to the postmodern irony.

Following that path, Alan Wilde (1981), like Frye and Fussell, examined the intersection of narratives, history, and irony. He found three “modes of consciousness” (op. cit., p. 2) in irony – pre-modern (mediate irony), modern (disjunctive irony), and postmodern (suspensive irony) – relating to three sets of assumptions about truth and reality. In the pre-modern, illustrated by authors like Chaucer or Swift, truth may be obscured by naivete, hypocrisy, deceit, or foolishness, and it is the job of irony to pull back the veil, revealing truth. Modern irony, according to Wilde, tended toward paradox, illustrated by authors like Woolf. Truth was an enduring tension between alternative views of reality that could be lived and brought to aesthetic closure but not fully resolved. Wilde then anchored postmodern irony in the existential phenomenology of Merleau-Ponty (e.g., 1964), with

truth to be found in direct experience. The irony came in the juxtaposition of experience to theories about reality, especially the typically modern transcendent narratives like those associated with Adam Smith, Karl Marx, Sigmund Freud, and so on. Among the prototypical authors of this post-modern irony was Donald Bartheleme whose short stories often made fun of hamstringing paradoxes of modernist visions of reality in contrast to the direct, everyday pleasures of life.

Dynamics of Meaning

Romantic Irony

To this point, the discussion has dealt with specific ironies, distinguishing one event from the norm, or general ironies of *zeitgeist* or worldview that, though broadly applied, still distinguish particular times and places from others. The idea of romantic irony aimed higher, though still rooted in a specific time and place. Romantic irony was defined initially in a single publication, *The Athenaeum*, by a few German authors over the 2 years of the publication’s existence, 1798–1800. Building primarily on the works of Frederick Schlegel (1798–1800/1991), one of the *Athenaeum* contributors, the concept of romantic irony has since spread and continues to be relevant (Colebrook 2004).

Representations in art always point to meaning beyond the immediately evident – a painting is not just color on canvas but represents other meaning; a character’s actions on stage or in a novel have meaning about the character, plot, and so on, beyond the mere action; and the words of poetry evoke feeling and thoughts beyond the technical meanings of the words. Muecke called this the general irony of art. It is a core element of romantic irony, but the romantics were going even further, seeing such incongruities as an ongoing dynamic among artists, their art, and its meaning. In the romantic view, people are god-like in their abilities to self-create, and artists’ minds are free to venture into any thought. Any work of art is limited, however. Therefore, the artists must both produce the work and transcend it to think anew. The work itself should reflect this dynamic,

presented with ironic self-consciousness as something to be, at once, taken seriously and transcended by the audience. In producing work, artists are, thus, satirizing the very work produced. Schlegel (1798–1800/1991) described this relationship as “transcendental buffoonery” (op. cit., p. 6, fragment 42).

Muecke (1969/2020) used Peter Weiss’s 1964 production of *The Persecution and Assassination of Marat as Performed by the Inmates of the Asylum of Charenton under the Direction of the Marquis de Sade* as a modern example of romantic irony. The play presented a series of simultaneous and incongruent contexts: the actual assassination of Marat in the eighteenth century, de Sade’s play about it, the performance in the asylum, and the 1964 production. The meaning of many lines would be different in these various contexts, and whether a line even belonged to the supposed play by de Sade or the improvisations of the inmates or of the actors now on stage was often unclear. At every point the limitations of the art were at the fore, simultaneously presented and satirized. In using this example, Muecke emphasized the ongoing relevance of romantic irony well beyond the romantic era.

Concerning the romantic view of the artist’s “transcendental buffoonery,” Muecke used an analogy of a clown tightrope walker at a circus. The professional tightrope walker walks solemnly across the treacherous line, but then the clown’s buffoonery feigns fear, nearly falls, falls and is caught by the rope, and runs to the end. Of the two, the clown must be by far the more skilled artist.

Art may have been the inspiration for the theorists of romantic irony, but they also knew that the implications extended to life more generally. If meaning is characteristically stable, then specific ironies marking script anomalies of naivete, hypocrisy, arrogance, and so on would be sufficient. If, in addition, cosmic ironies applied and consistently undercut the efforts of humans, irony would also mark recurrent frustration as a constraint on human possibilities. In describing the breadth of romantic irony, Claire Colebrook noted, “If, however, all life were instability, process, becoming and creation, then irony would be the very truth of life” – irony as the way to surmount limits

through the limitations themselves. Even the self is not fixed but a process of creation and expression, making irony “the only true mode of life” (Colebrook 2004, p. 52) in the romantic view.

Final Vocabularies

Romantic irony has been cited as a precursor to later postmodern theories (Colebrook 2004; Wilde 1981). It is not surprising, then, that postmodern theorists emphasized the power of irony (e.g., Hutcheon 1994; Lemert 1992; Venturi 1977; Wilde 1981). For example, the postmodern pragmatist Richard Rorty (1989) called for the use of irony to address limitations of the final vocabularies by which people evaluate and justify their behaviors and the behaviors of those in their communities. Vocabularies are *final* in that their value is assumed and cannot be explained except circularly. Yet these vocabularies define truth, right, good, bad, and so on. They are not just tools but constitutive of people.

Ironists have radical doubts about their final vocabularies and take an ironic stance toward this fundamental aspect of themselves and their worlds. Here, Rorty aligned with Muecke’s contention that all situations contain latent irony and Hutcheon’s view of irony “happening” with enough sophistication. Rorty was explicitly political, however, calling for people to be ironists as a stance toward the contingency of meaning and in service to social solidarity. His imperative to irony in support of social solidarity was, in effect, a call to some of the functions of irony that Hutcheon identified but not others. At the same time, his philosophy was in many ways in line with the romantic view of irony as continual recognition and engagement with the limitations of both meaning and self, an engagement intended to use the very limitations of meaning to move beyond them.

Conclusion

At this point many links between irony and possibility are apparent. First, the structure of ironic meaning, necessarily holding contradictory views of a situation in tight juxtaposition, requires

acknowledgement of multiple perspectives. Then the function of irony in undermining expectations – often blind assumptions – can open up a space for new possibilities. And, in some cases, irony can produce a kind of logic that generates unexpected insights about new possibilities. At larger scales, irony can influence and characterize discursive communities and periods of history. These world-views have at times highlighted the pervasive presence of contradiction, incongruity, and contingency – the raw material of irony – in the dynamics of meaning itself.

Irony's judgmental edge is also important. The ironist takes a critical stance, whether seen as temporary corrective, as understanding of the world, or as a way to circumvent the limits of meaning. Irony does not facilitate mere possibility but always both possibility and evaluation: perception as well as orientation. At the extreme, romantic irony describes an ongoing surmounting of irony upon irony, but at each level the judgmental edge of irony orients the meaning at hand and points to further irony, an ongoing re-orientation, reflected in the title of Muecke's (1969/2020) book, *The Compass of Irony*.

To conceptualize the possible without irony risks dichotomizing the extant and the possible in simplistic terms. The cutting edge of irony can undermine attachment to what is or might be, and the broader views of irony remind us that no meaning is absolute or static. There are always other perspectives, values, and meanings to consider. Even on irony itself.

Cross-References

- [Discourse](#)
- [Divergent thinking](#)
- [Humor](#)
- [Possible worlds](#)
- [The Possible in the Life and Works of Sigmund Freud](#)

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Jazz

Marquis' Brannndon McGee
The Soundsmith Guild, Geneva, Switzerland

Abstract

To describe any musical tradition or genre solely as the summation and analysis of its musical notes and compositions may be a disservice to the wealth of knowledge, history, and cross-disciplinary lessons to be learned from it. There may be no other musical styling that this rings more true for than Jazz. In some regards, Jazz could be considered a musical synonym for adaptability. As a style, it has influenced numerous musical genres and provided a framework for musical improvisation and communication that has become the standard for musicians seeking to become more flexible and well-rounded in their playing. What can musicians and nonmusicians learn from Jazz? This entry will focus first on a brief history and description of Jazz and present opposing ideologies relevant to the difficulties of defining the musical tradition. It will then break down various aspects of Jazz, explain general practices in learning how to utilize these aspects, and then discuss what is possible for the genre itself and what may be possible for nonmusicians in terms of incorporating Jazz into their own lives.

Keywords

Jazz language · Improvisation · Adaptability · Communication · Flexibility · Multiculturalism · Influence

Definition and History

Etymologically, the word “Jazz” is believed to be derived from the word “Jasm” which is an American English slang term meaning energy or vitality (Lighter 1997). As a musical tradition, Jazz originated in African-American communities in Louisiana, USA in the late nineteenth to early twentieth century. It was the result of the blues, negro spirituals, and ragtime, mixing with European classical and military band music in the multicultural hub of New Orleans.

Stylistically, Jazz is commonly characterized by swing and syncopated rhythms, call and response, and an openness to musicians taking creative liberties during performance.

Jazz bands primarily consist of a “rhythm section” (drums, guitar, bass, piano, or any other instrument capable of providing harmonic or rhythmic structure to a musical performance) and “lead instruments” meant to perform the melody of a Jazz piece (saxophone, trumpet, voice, and any instrument able to produce tones and pitches.) The structure of a Jazz song or “tune, as it will be referred to through this entry, is customarily: The Main Theme (Melody) /an Improvised

Section/Return to Main Theme. Jazz has undergone many different eras and additions, such as Swing, Cool Jazz, Bebop, Hard Bop, Latin Jazz, Jazz fusion, and others with their own specific peak of popularity, roster of well-known musicians, and unique style.

Though we are able to trace the inception of Jazz to a general region, era, and various musical styles, an exact definition of what Jazz is, in some circles, is still heavily debated.

Many musicians have explained Jazz as a feeling. Jazz, in this explanation, becomes a happening; an emotional event that you have to be present for, open to, and ready for when it happens or you won't understand it. The concept of Music as a happening or emotional event is not one unique to this tradition, yet various aspects of Jazz, such as nonverbal/lyrical communication, improvisation, etc., may create a slight barrier of entry for a listener to experience it as such, without previous knowledge or exposure. Some musicians have even stated that the question of what Jazz is, is problematic in itself. In describing this viewpoint, one is reminded of the famous and often repeated quote by legendary Jazz trumpeter Louis Armstrong: "Man, if you have to ask what it [Jazz] is, you'll never know" (Redling 2017, p. 184). While there is nothing inherently wrong with this sentiment and it allows for much freedom within the musical tradition, it does make Jazz more difficult to describe to those interested in learning more about it. Many first-time listeners to Jazz hear the improvised sections of it and cite a difficulty to immediately understand what is happening. When paired with Armstrong's quote, and more like it, it is easy for that first-time listener to interpret their difficulty with the music as a difference in personal taste, rather than an opportunity to learn and enjoy some of the intricacies that distinguish Jazz from other musical traditions.

Another perspective on Jazz seeks to explain it from a traditional scholastic basis. This school of thought tackles the subject of Jazz as something that can be learned from knowing the scales, chords, history, and compositions associated with it. The push for developing a formal and standardized system to learn Jazz comes in direct riposte to the notion that Jazz is all made up, full of

wrong notes, and unrooted in musical theory. On this subject, Famed Jazz musician and Bandleader Wynton Marsalis notes: "Jazz is not just 'Well, man, this is what I feel like playing.' It's a very structured thing that comes down from a tradition and requires a lot of thought and study." (Rinzler 2008, p. 126) While variations of this viewpoint on Jazz have been widely accepted in school curriculum, it has also been criticized, with many Jazz musicians stating that an overly formal study of Jazz leads students to perform without emotion, flexibility, or general musicality.

One of the founding figures in Jazz education, Jerry Coker, states that "Jazz is a very creative, personal sort of music. It is a musical democracy in which diverse approaches abound and are generally accepted. Though there are traditions and common-sense elements, the individual has the relative freedom to express himself/herself at will with respect to the utilization of the tradition." (Coker 1989, p. 14)

Divergent opinions may seem at first to limit the potential and possible for the idiom; in reality, they lead to blended conceptualizations and learning tools for the Jazz listener, scholar, and musician. To explore this blending, it serves to examine aspects of Jazz that are generally accepted as being vital elements of the musical tradition.

Jazz Language

Jazz language can be interpreted as the culmination and development of past, present, and future trends in the performance of Jazz music. To learn Jazz language, players are usually encouraged to transcribe performances of Jazz musicians. To transcribe, one listens to how a Jazz musician plays a tune and analyzes the performance as a whole. A student of Jazz language is tasked with learning how the player tackles both the Melodic and Harmonic substance of their selected musical piece. Students of Jazz are usually encouraged to transcribe improvised solos of a musician who plays that student's primary instrument. The objective is to not only learn the musical notes the musician plays, but to learn how to evoke the

same phrasing and subtle tendencies the studied player has. Phrasing encompasses many different stylistic choices a musician may use to perform a note or musical passage. For instance, A common solo for Jazz saxophonists to transcribe when learning rhythmic phrasing is Sonny Rollins (Tenor Saxophonist) in the tune “St. Thomas” on the album *Saxophone Colossus* (1956). Within this solo, Rollins employs percussive techniques and short notes numerous times and interplays it with strings of notes, before delving deeper into longer note patterns. He also repeats a specific melodic pattern multiple times in various note groupings, which demonstrates to transcribers how one can take a single musical idea and keep it relevant, recognizable, and appealing to the listener, even if it is played in new and different parts of the same song.

Depending on the era of Jazz and/or geographical location the transcription subject was/is playing in, one can find particular tendencies. A Saxophonist playing solo during the Swing Era of the 1920s may sound very different from a Saxophonist playing the same tune in the Bebop Era of the mid 1940s-50s. The Saxophonist from the Swing Era of Jazz may try to create a solo that the audience can dance to, while the bebop saxophonist may choose to create a faster solo and display many complex musical patterns. The effects of transcribing can vary widely. Sometimes a musician may find it appropriate to completely recreate part of a very well-known solo as part of their own during a performance, as an homage. Other times it may be very apparent that a musician has been transcribing multiple performances of a famous Jazz musician, and while they may not be playing a specific solo from that musician, they are emulating techniques and habits of them in their own playing. It is not uncommon for Jazz musicians to compliment and discuss with one another about the influences they heard from each other during their solos. Conversations emerge saying “Have you been listening to a lot x lately? I feel like I heard some similarities in this point of your solo.” For many Jazz musicians, transcribing becomes a rite of passage, a training tool, and way to relate with their fellow bandmate. From a music theory standpoint,

transcribers also are able to see what scales might be appropriate in the performed piece, or what liberties could be taken in the harmony.

Musical phrases and patterns found within the Jazz Language are commonly referred to as “licks”. Licks originate and are discovered in many different circumstances: from sections of standard Jazz tunes, to patterns a famous Jazz musician played in a well-known solo, etc. An example of this is the “Cry Me a River” Lick, which is titled after the song of the same name by Arthur Hamilton (1953). Another example, that has become increasingly prominent in the last 9 years, has been named simply “The Lick.” In 2011, A group of musicians on Facebook and YouTube named “The Lick,” released a found footage compilation video of clips of various musicians playing the same 8 note musical pattern. The musicians in the video were not from the same band, neither had many of them ever met. Many of the musicians in the video spanned several generations, cultural backgrounds and different subgenres of Jazz. This video and more, depicting other musicians playing this pattern in different situations, are now shared frequently among Jazz students. The prevalence of the lick has solidified it as Jazz’s most well-known cliché, or meme. Though there is no consensus on where exactly the lick originated from, this phenomenon demonstrates a unique possibility within Jazz: that two musicians from opposite sides of the world could play a pattern or musical phrase and have learned it from a different source or used it in completely different contexts.

There are also titles for types of licks, such as “2-5-1” licks that are numerous, which denote the patterns’ use in the theoretical harmonic function of the songs they are found in. There exist many books with Jazz patterns/licks notated in sheet music, with usage cases for them. While these are helpful to students of Jazz who are visual learners, many musicians discourage learning these patterns solely through sheet music, as there may be limitations to what can be written concerning the exact specifications of how to use musical phrases in a live situation.

Many musicians learn from each other by using their own ears as guides. Training the ear

to derive information from what is being played, and using this to help in deciding what to perform is a highly valued skill within Jazz. Playing by ear is a skill harnessed through trial and error and developing a wide experience listening to the type of music the listener intends to improvise in. Musicians also learn more about what others are doing in Jazz by attending “Jam sessions” and taking note of what their peers are playing (techniques, patterns, favored tune choices, etc.). Jam sessions are “an often impromptu performance by a group especially of Jazz musicians that is characterized by improvisation.” In this instance, the individual Jazz musician learns from the collective group, and members of the collective learn from the individual. This inter-musician relationship makes growth, experimentation, and commonalities possible within the tradition.

Improvisation

Though licks and other musical information gleaned from the observance of Jazz musicians are regarded highly as tools to learn how to play Jazz, musicians are encouraged to not use them as a crutch or use them all the time in their playing. This stems from the art form’s strong appreciation for dynamic and unpremeditated playing. Examples of this can be found when observing instances of improvisation and musical communication found in Jazz. Improvisation, through the lens of Jazz, is spontaneous musical composition. Improvisation usually occurs after the main thematic material(melody) in a song has been performed, in the form of a solo. During a solo, musicians improvise one after another, either over the entire harmonic form (the chords) of the song, or a specific section of the piece. The underlying harmony is played by the rhythm section. Returning to the example of Sonny Rollins on *St. Thomas*: After the melody finishes, Rollins begins his solo on Tenor Saxophone. He is then followed by a drum solo (Max Roach), and Rollins returns for a second solo at a faster tempo. The pianist (Tommy Flannagan) begins a solo after Rollins finishes, and finally everyone goes back to the “Head” (Melody). Rather than

hard-set rules, there are what should be considered best practices to create a successful solo. One example is that it is advised that while performing a solo, an improviser keeps the original melody within their mind and makes allusions and call-backs to it. This suggestion, while very helpful, has seen many alterations and, in some cases, not been observed in some Jazz solos still considered to be effective by Jazz musicians and musicologists.

In Jazz improvisation, there is great emphasis placed on knowing and highlighting chord tones in a respective piece of music. Chord tones form the basic building blocks of each grouping of notes vital to the harmonic structure of a song. When chord tones are incorporated into a solo, they give the bandmates and the audience of the improviser clues as to where the solo is in the form of the music. If the entirety of an improvised solo does not incorporate any chord tones, it is usually seen as ineffective, as it did not provide any allusion to the most recognizable notes in the harmony of the performed music. Conversely, if a solo only relies on chord tones, it runs the risk of being viewed as boring and ineffective also. One metaphor to chord tones could be the subject or main message of a sentence. In a conversation, if one says a lot of words, but never quite illuminates the subject or point of the sentence, it can give the impression that the speaker is rambling, maybe has forgotten what they were trying to say, or simply had nothing to say. If a speaker merely gives the names of subjects in a discussion, without elaborating, or expositing, that discussion becomes quite dull, leaving the listener with words that lack any connectivity. Soloists are encouraged to find a balance between the two to provide the possibility of understanding and mutual enjoyment to their listener. While this section slightly focuses on music theory and best practices, the goal of improvisation is not to force one to use these concepts and nothing else, but rather provide a framework one can use to create an ad-lib story or conversation. Conversation is a key word here as improvisation, while being primarily focused on the soloist, is also aided by the messages shared between the improviser and band that is performing with them.

Inter-Musician Communication

In Jazz, musicians are emboldened to interact with their fellow bandmates during performance. When communication occurs between performers in Jazz, the piece they are playing becomes less static and more flexible and open to various changes. Communication between Jazz musicians is achieved in a number of ways; there are both visual and musical cues shared between players during performance. For instance, when a soloist is done with their improvised section, and it is time for the band as a whole to return to the melody of the song, the bandleader may tap the top of his head to inform the members of the coming change. This is in reference to the main thematic material of Jazz tunes being termed “The head”. Another tool employed in musical communication is mimicry. Mimicry informs players that not only have they been heard, but that their bandmate will adjust to their playing, and is willing to copy and accentuate the patterns they are performing to aid in their performance. Rhythm and Tempo changes during a solo are also useful for musical communication. In terms of tempo, if a player begins their solo at a very slow pace, this could be a message to the rest of the band to either copy the change in tempo, lower the volume of their own playing, and treat the solo as a ballad. If a player suddenly speeds up in their solo, this could be encouragement for the band to become louder and increase their tempo. For rhythm, there are a number of ways communicative Jazz musicians can change the music, at some points even making the original tune unrecognizable. For instance, if a musician, while playing, decides that they would like to change the rhythmic timing of their solo, they can begin accenting beats that normally would not be as ideal or appropriate in the song. If done intentionally and heard by the rest of the band, the performing group has choices such as changing along with the soloist, or intentionally sticking with what they were playing before to lead into multiple rhythms overlapping; called polyrhythm. Another route a soloist can take while improvising would be to include rhythms more commonly found in other styles of Jazz or genres of music in general. If the

musicians bandmates are also familiar with these rhythms or the type of music associated with them, the group can shift what they are playing stylistically. For example, a slow Jazz waltz could suddenly be transformed into an incredibly fast tune resembling something more akin to Salsa dance music. This is made possible as Jazz students are encouraged to incorporate what they are learning into their own musical style; combining, transforming, and innovating their own influences from other genres of music and personal preferences.

Influences and the Possible in Music Genres

As stated before, Jazz has a long history of melding with and transforming various musical styles both in its inception and development. One example is how, in sharing similar roots as music influenced by the African Diaspora, Samba and Jazz melded together to give rise to Bossa Nova in the late 1950s. Another Instance of this is during the 1960s, when musicians started infusing Jazz into Rock and Roll, Funk, and Rhythm and Blues, resulting in a genre termed Jazz Fusion. This is a very divisive era of Jazz, where many traditionalists refer to the creation of Jazz fusion as the end of Jazz. Other proponents of Jazz argue that Jazz Fusions inception does not signify the end of Jazz, but simply the progress of the musical tradition as it has always been. Jerry Coker surmises that “elements of the Jazz style have permeated nearly all known musical styles and musical functions. Similarly, the open door policy of Jazz has caused the music to absorb and reflect elements of virtually all non-Jazz musical styles, yet retain a sort of diverse identity” (Coker 1989, p. 15).

If a musical tradition’s origin and development is a result of the mixing and melding of various influences, does incorporating another influence signify its end? At the time of writing this article, the Jazz fusion most prominent and popular is Hip hop, Soul, Rnb, and numerous world music genres, all combining with elements of Jazz. The possible for Jazz as a musical tradition is that it is

ever-growing. Jazz will continue to influence, transform, and mix with other genres, and wherever its aspects of language, improvisation, and musical communication are needed, it will show itself.

Conclusion

What can nonmusicians learn from Jazz? How can one embody Jazz or incorporate it into their life? The most obvious answer would be to listen to it; to give Jazz a chance and try to hear what has been described in this article. The reader is encouraged to try and investigate where musical communication is occurring, or listen for influences and language within the solo sections of a tune. The second answer would be to attempt to embody Jazz as a mindset. To embody Jazz as a mindset means to open oneself to respect, gain knowledge from, and embrace the past. It means being able to connect with one another, improvise, and incorporate different influences. The possible for the

nonmusician becomes utilizing aspects of Jazz to adapt to and influence the future.

Cross-References

- ▶ [Collaborative Creativity](#)
- ▶ [Creative Development](#)
- ▶ [Emotion](#)
- ▶ [Polyphony](#)
- ▶ [Possible in Performance and Performing Arts](#)

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Lack of Information

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Leadership

Ryszard Praszquier
Institute for Social Studies, University of Warsaw,
Warszawa, Poland

Abstract

The entry presents a review of definitions of leadership, illustrated by historical development of this concept. It also characterizes various kinds of leadership, from the Great Man theory and early research done at Ohio and Michigan, contemporary ideas such as distributed, shared, authentic, and empowering delineations of leadership.

In doing so, there are introduced mechanisms used by leaders for garnering support, that is, *social influence* and its various manifestations, and *charisma* in its classical personality-based definition, as well as the mission-based one.

The summary section identifies exemplary attempts at measuring leadership effectiveness, concluding that in-depth studies on leadership are still needed to understand this critical aspect of introducing social or business change-making.

Keywords

Social influence · Charisma · Empowerment · Creativity · Social capital

Introduction

Leadership has ancient roots and evolutionary origins that humans have shared with animals for millennia (Van Vugt 2006; King et al. 2009; Van Vugt and Ahuja 2011). Herd leaders help to decide when and where to forage or rest, when to leave a pasturage and how to react to other animals (Van Vugt and Ahuja 2011). Some early definitions of leadership (mainly twentieth century) may be applied to animals as well as to humans, for example, leaders should have an ability to organize participants and direct their attention to issues the leader considers significant (Cyert 1990).

One early delineation of leadership is expressed by tribal societies, such as the Melanesian and Polynesian communities, which evolved into the Big Man paradigm. To become a Big Man took a series of acts that elevated a common citizen to a standing far above his peers and attracted a loyal following (Douglas 1979).

In Hellenistic times, the Roman Emperor Marcus Aurelius (second century AC) supported a similar concept by suggesting, that the leaders should carry themselves with *gravitas*, a Latin word for dignity, impressiveness, seriousness, influence, weight, and presence. Some authors

even today hold that *gravitas* should be a critical quality for contemporary business leaders (Goyder 2014).

Defining Leadership

Interestingly, this model returns in nineteenth century as the Great Man Theory. It describes highly influential heroes who, due to their personal charisma, intelligence, wisdom, or political skills, were able to exercise their power (Carlyle 1988).

One of the earliest definitions of leadership is presented by Bellows (1959), who posits that leadership is creating opportunities for group-members, as to achieve common goals with maximum economy (i.e., minimum of time and work). Similarly, Kouzes and Posner (2008) refer to the group process, adding that the goal to achieve “something extraordinary”: leadership is a process of forming opportunities for people to contribute to making something extraordinary happen.

Early Studies and Ways of Understanding of Leadership

Kurt Lewin’s Leadership Theory

The father of social psychology, Kurt Lewin developed with his colleagues in the 1930s (Lewin et al. 1939) a structure for identifying three basic kinds of leadership that are still mentioned in contemporary sociological studies (e.g., Macionis 2010). These styles are:

- *Autocratic* (directive, authoritarian); characterized by a centralized authority dictating work methods, making unilateral decisions and limiting employees’ participation.
- *Democratic* (participative); characterized by involving team-members in the decision-making process, delegating authority, and using feedback as an opportunity to coach employees.
- *Laissez-faire*; a free-style characterized by giving employees liberty to ask questions, make decisions and complete their work as they see fit. This is probably the most weaker leadership style; however, in some exceptional

therapeutic situations may be effective, for example, the Summerhill school for problem children (Neil 1977).

The Ohio and North Michigan State Universities Studies

In the 1950s and 60s, when the United States experienced its longest uninterrupted period of economic expansion in history, it became important for businesses in the United States to better understand what behaviors make a leader successful. The Ohio and North Michigan State Universities pioneered studies on leadership.

Ohio developed the Leadership Behavior Description Questionnaire (LBDQ, 1800 questions) and its abbreviated version (LBDQ-XII, 150 questions). These questionnaires are still used today (Fleishman 1953; Halpin and Winer 1957; Stodgill et al. 1962).

Their study found two types of behavior to be critical to success:

- *Initiating structure*: a task-oriented behavior, facilitating goal accomplishment (e.g., organizing work, giving structure, defining roles, scheduling)
- *Consideration structure*: a relationship-focused behavior (e.g., building camaraderie, respect, trust)

The Michigan studies added *participative leadership* to the Ohio measures (Likert 1961, 1967).

Contingency Theory of Leadership

Contingency theory holds that situational factors interact with leader’s traits and behavior to influence leadership effectiveness. There are no ideal and fixed leadership qualities. Both task-oriented and relationship-oriented leaders can be effective if their orientation fits the situation. The optimal course of action is contingent (dependent) upon the situation (Fiedler 1967).

The Role of Employees

Situational Leadership Theory

The Situational Leadership Theory (SLT) was developed in the 1970s and early 1980s,

holding that the critical component of leadership is employees' readiness (i.e., competence and commitment) to cooperate. Effective leadership should adjust not only to the task, job, or function that needs to be accomplished but also to the person or group that is being influenced (Blanchard et al. 1985; Hersey et al. 2012).

Path-Goal Theory of Leadership

In the 1960s and 1970s, researchers developed the Path-Goal Theory of Leadership (PGTL), which claimed that the effectiveness of leadership depends not only on the outcomes (performance) but also on subordinates' satisfaction and motivation (House 1971). Based on the conviction that it's critical to maintain an adequate perception of how following a particular *path* will lead to a particular *goal*, PGTL holds that team-members are motivated when they expect that their effort will result in high accomplishments, and that these achievements are rewarded in a valued way (Evans 1970).

Contemporary Approach to Leadership

Transactional Versus Transformational Leadership

Transactional Leadership

Transactional leaders achieve collaboration by exchanging information with followers and by monitoring the performance. They do not take into account the needs of their subordinates. They create an influential ambience, in which individuals are convinced that it's in their own best interest to do as they are told (Northouse 2010).

There are two basic components of transactional leadership (Judge and Piccolo 2004):

- *Contingent reward*, understood as the degree to which the leader sets up constructive transactions or exchanges
- *Management by exception*, defined as the monitoring by the leaders their followers' behavior and taking corrective actions

Transformational Leadership

Transformational leaders (Bono and Judge 2003; Judge and Piccolo 2004; Bass and Riggio 2006) or transforming leaders (e.g., Burns 2003) obtain support by inspiring followers to identify with their vision; they stimulate and inspire followers (Bass and Riggio 2006). It was documented that transformational leaders stimulate organizational creativity (Allen et al. 2013).

The following elements of transformational leadership have been identified (Bass 1985; Judge and Piccolo 2004; Bass and Riggio 2006; Burns 2003; Northouse 2010):

- *Idealized influence*, which basically refers to charisma. Charismatic leaders display conviction. They appeal to followers on an emotional level.
- *Inspirational motivation* is understood as the articulation of a clear, appealing, and inspiring vision. Leaders who use inspirational motivation challenge followers to meet higher standards, communicate optimism about future goal-attainment, and provide meaning for the task at hand (Bass 1985; Judge and Piccolo 2004; Bass and Riggio 2006; Northouse 2010).
- *Intellectual stimulation* inspires followers' creativity by questioning assumptions and challenging the existing status quo.
- *Individual consideration*, which means attending to and supporting the individual needs of followers.

Shared and Distributed Leadership

Shared Leadership is a dynamic, interactive process among individuals and groups with the objective to lead one another. This process often involves peer to peer influence. Leadership is shared, rather than focused on one person (Pearce and Conger 2002; Carson et al. 2007). The team in this approach can be viewed as a potential source of leadership (Mayo et al. 2003).

Distributed Leadership is described as an emergent quality of interacting individuals, repealing the traditional structures of leadership and sharing diverse expertise distributed across many individuals, as opposed to the system of

few acting in a top-down way (Bennett et al. 2003; Bolden 2011).

Leaderful and Teal Organizations

Leaderful Organizations provide a milieu in which everyone participates in leadership. This style challenges the conventional view of leadership through taking co-responsibility and co-leadership; it redefines leadership as a collective practice (Raelin 2003, 2005, 2011).

Teal Organization is advocating for, and enabling, workers' self-management, wholeness, and a deeper sense of purpose (Laloux 2014; Giannobile 2019).

Authentic and Creative Leadership

Authentic leaders acquire their legitimacy through having honest relationship with followers who value their leader's input and see them as open and ethical. By building trust and generating enthusiastic support from their followers, authentic leaders are able to improve individual and team performance (Gardner et al. 2011).

Creative leadership drives change through building an atmosphere prompting creativity, continuously discovering and defining new problems, and implementing the new solutions (Bellows 1959; Basadur 2004). Creative leadership is seen as a core leadership competence (Puccio et al. 2010) and an important way of breaching barriers (Rickards and Moger 2000).

Empowering Leadership

Elaborating on Kouzes and Posner's (Kouzes and Posner 2008) aforementioned definition, a new way to define leadership would be: a process of releasing and augmenting the potentials of groups, communities or societies, leading to taking co-ownership of the idea, pursue it, and make something extraordinary happen.

In lieu of this definition, *Empowering Leadership* is a process that is both value- and efficiency-driven that facilitates the emergence of new occurrences through endogenous dynamics. The process is aimed at triggering the potentials of individuals and groups leading to identifying with, and taking co-ownership of, an idea to make innovation emerge (Praszkier 2015, 2018).

Empowering Leadership has ideas in common with Shared and Distributed leadership, as it instigates co-responsibility, co-leadership, peer-to-peer responsibility, and group-oriented dynamics. It also shares with Creative Leadership the emphasis of augmenting coworkers' creativity, by facilitating and encouraging the bottom-up dynamics of innovating.

A metaphor depicting the empowering leadership style is "Transforming Buffalos into Geese," named after the book "Flight of the Buffalo" (Belasco and Stayer 1993). Buffalo are followers who will do whatever the lead buffalo wants, sometimes even fall off a cliff while following the leader. The book describes two differing types of team leadership.

In the traditional top-down leadership model a leader is responsible for planning, organizing, commanding, coordinating, and controlling the team – an analogue to the "head buffalo herd."

The new approach perceives the team as a flock of geese, flying in unison in a "V" formation, through mutual (horizontal) exchange of information on earth gravity, magnetic directions, etc. Through empowering leadership, "geese" share responsibility for the progress of the entire flock.

Mechanisms Supporting Leadership

To garner support, leaders use such mechanisms as *social influence* and *charisma* for attracting and affecting team members or employees.

Social Influence

At the end of the twentieth century, the understanding of leadership focused on a specific relationship described as "influence" (e.g., Rost 1993); also in the twenty-first-century leadership is seen as an extraordinary influence that is found in a person or a group (Robinson 2010). Leadership may be perceived as a kind of social influence, in which the leader recruits the support and cooperation for the achievement of common goals (Chemers 1997, 2000; Northouse 2010; Kruse 2013).

In an autocratic style of leadership (Lewin et al. 1939) influence is mostly executed through obedience, persuasion, compliance, and manipulation:

Obedience

Several experiments have shown that people tend to obey someone solely because they perceive them to be an authority (Milgram 2009; Martin and Hewstone 2007). People justify their behavior by assigning responsibility to the authority, rather than taking it themselves. Moreover, they might obey orders even when the actions ordered are against their own ethical standards.

Persuasion

Persuasion, on the other hand, is earning subordinates' cooperation through various intentional and non-manipulative efforts aimed at influencing others' beliefs, attitudes, intentions, motivations, or behaviors; as such it differs from exercising top-down authority (Wood 2000; Petty et al. 2003; Gass and Seiter 2013).

Compliance

The use of authority or persuasion may lead to compliance, that is, to adaptation whether or not one agrees with the leader – as long as one's dissenting opinions are kept private. This means adjusting ones' behavior, though not necessarily one's mind. Several studies have documented that greater external pressure generally leads to greater compliance (Freedman and Fraser 1966).

Manipulation

Manipulation is defined as using deceitful influence over subordinates for the leader's own advantage (Braiker 2004; Cialdini and Sagarin 2005; Maxwell 2013). For example, when people are initially persuaded to obey easy commands and, as a result, feel obligated to obey gradually more difficult ones, this kind of manipulation is called entrapment, also known as the foot-in-the-door phenomenon (Freedman and Fraser 1966).

Self-persuasion and Conformity

A more sophisticated method of adaptation is self-persuasion. In this case, people are not forced to follow. Remaining free to choose, they build up internal justifications for obedience. Leaders influence self-persuasion indirectly, by creating situations, where people are prompted to persuade themselves to change their own attitudes or

behavior (Aronson 1999). It involves modifications within the internal cognitive system, rather than external enforcement. This form of adaptation is called conformity, which, as opposed to compliance, involves a change not only in behavior but also in beliefs or thinking, in order to comply with others' requirements (Deutsch and Gerard 1955).

Identification and Internalization

On a higher level of leadership, the earlier mentioned mechanisms of executing authority, that is, obedience, manipulation, compliance, and conformity, would not be satisfactory. Democratic, participative, relationship-oriented, shared, distributed or empowering leadership would gain followers support by earning their *identification* with the leader's vision and objectives. Identification with a leader happens when team-members are influenced by a leader who is liked and respected (Kelman 1958).

Probably the highest level of adaptation or acceptance is internalization, which happens when people adopt a belief or behavior both publicly and privately, without any internal conflict (Kelman 1958). Through internalization people incorporate within themselves new values or attitudes and, in that way, become truly committed and loyal partners in pursuing desirable goals.

Charisma

Personality-Based Charisma

Personality-based charisma, characterized as a compelling attractiveness or charm that can inspire devotion in others, was introduced into the literature by one of the founders of sociology, Max Weber (1978). Charisma, seen as a "magical gift" possessed by leaders, makes their followers strongly identify with the leader (Stark 1997).

This sort of charisma is perceived as a debatable leadership characteristic, being criticized as a "false" leadership trait (Solomon 2014).

Mission-Oriented Charisma

Instead, Praszkiec (2018) proposes Mission-Oriented charisma. "Mission-oriented" means that it is not necessarily personality-based

(as indicated by Weber). Instead, it is a specific radiance power associated with the particular mission, and passion behind its pursuit. Influence is achieved by summoning people to join in a movement for change and in co-leading such a movement (Tucker 1968; Edles and Appelrouth 2014).

Summary and Conclusions

Various definitions and kinds of leadership were presented. However, the field of leadership is dynamic and diverse. Leaders are reaching to various resources, for example, Japanese tradition, applying the Kaizen approach, as well as to modern concepts, for example, Versatile Leadership.

The first, *Kaizen* (meaning “continuous improvement”) refers to various activities that continuously improve all possible functions and involve all employees at all levels (Imai 1986). The Kaizen philosophy and methods spread across the world (Hannam 1993) and are recommended as a contemporary way for enhancing achievements in business (Miller et al. 2013), and beyond, for example, losing weight or quitting smoking (Maurer 2014).

Versatile leaders are capable of flexibly adjusting their leadership style to the people and particular situations. They have a range of methods which they can adapt according to the situation – as opposite to having a single way of leading others (Kaplan and Kaiser 2006). Teams can experience measurable improvements in performance when becoming versatile, that is, when people learn to adapt to others’ social styles (Leimbach 2009).

The contemporary approach to leadership, for example, the empowering leadership, seems positioning creativity as a central mechanism for achieving challenging goals. Creativity is here seen as a reflective, but also playful dialogue between diverse perspectives: “creative actions (...) open up, exploit and expand the possible” (Glăveanu 2018, p. 527).

There are also attempts to measure leadership effectiveness, especially whether the style of leadership affects the organization’s outcomes

(Madanchian et al. 2017). For example, there is a method for assessing leadership effectiveness (“Essential Behavioral Leadership Qualities,” Oyinlade 2006). There is also an interest in identifying leaders’ personality traits (e.g., Hogan et al. 1994), especially in cross-cultural context (e.g., Silverthorne 2001). Moreover, studies indicate that influence moves in both directions: the characteristics of group members are also influencing the leadership style (Sogunro 1999). It seems however, that studies on leadership effectiveness are still an open-end issue, prompting scholars for more in-depth research.

Cross-References

- [Empowerment](#)
- [Entrepreneurship](#)
- [Innovation](#)
- [Intelligence](#)
- [Social Change](#)

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Liminality

Bem Le Hunte
University of Technology Sydney, Sydney, NSW,
Australia

Abstract

The contemporary concept of “liminality” comes from the Latin word for “threshold” (limen or limin). Coined first by the folklorist, Arnold van Gennep, the liminal was defined as a moment of transition in the status of an individual in a ritual context. Van Gennep noted that in cultures around the world rituals could be divided into three stages – a before and after – with the liminal state in the middle, when mapped on a timeline. For example, there were preliminal rites (or separation rites), when an initiate was separated from the old and routine world, and postliminal rites, when an initiate

could be reincorporated into society. The in-between period formed the marginal or liminal phase, marked by liminal rites, where identity could be deconstructed, disoriented, and reformed, so that the initiate could be returned to society with a fresh identity and status. Van Gennep wrote that the concept of liminality could be seen as universal, and that the markers of liminality accompanied transitions of status, place, and time. (For example, a marriage can be seen as a transition between different states, movement away from home is a transition between places, and New Year rites are a transition between different moments in time) (Van Gennep 1909). Victor Turner revisited Van Gennep's notion of liminality in the context of male initiations in the Ndembu, and described the liminal phase of a male initiation ritual as a state "betwixt and between" – that interstitial no place, no time when the initiand is neither boy nor man. This time of ambiguity, disorientation, and disruption served to dissolve identity and disrupt the very structure of society before returning the initiate to the new state. Turner described the liminal society created for initiands as a "communitas" – a world that was utopian in nature – where initiands were treated as androgynous, seen to be occupying another place and marked by a sacred poverty and fraternity (Turner 1967).

This entry explores how the concept of liminality can be interpreted through the lens of possibility studies, as a fertile, emergent, and powerful stage where ordinary life or social states are disrupted – periods of time where transformation and transition can take place.

Keywords

Liminality · Transformation · Transition · Utopias · Unknowns · Creativity · Emergence · Learning · Being · Discovery · Self-discovery · Threshold Concepts

Introduction

The idea of change and transition is integral to the notion of liminality – and this transitory phase be

seen from an individual or social perspective. In this way, liminality is a process of becoming – a state of flux and change where the old self or the old rules and ways of being in society are reinvented in preparation for new ways of being, thinking, living, behaving, and organizing. The idea of the liminal gives us a powerful framework for many themes in possibility studies. Futures thinking and forecasting assume a stage of liminality or "becoming" – a state between the present and a desirable future world. Similarly, the study of utopias becomes the exploration of a society in a liminal state or "communitas." And even the study of creativity involves a state of "becoming" through engagement with a phase of emergence and not knowing. These social states and individual acts have creativity and transformation at the core, and their transformations follow the patterns of transition identified by Van Gennep and Turner, as they all take place over time and space with a time or stage that is "betwixt and between" for the emergence of the new.

Liminality in Myths and Stories of Transformation

While Van Gennep and Turner focused on liminality and ritual, Joseph Campbell looked at the role of liminality in myth and story. Campbell claimed that the heroes in myths around the world followed the three same phases of transition and transformation. A hero had to leave the comforts of their world to enter a liminal world and answer a "call to adventure," rich with possibilities, even stepping through a threshold (or "limin"), often as a reluctant hero, requiring a guide or mentor to help them enter the liminal phase of transformation. Having stepped over this threshold, the mythic world then opens up for the hero, where they have to slay demons and overcome deep fears within themselves. The liminal makes it possible for the hero to discover their own power – to discover the possible – as they face the unknown (represented by monsters and other such mythic challenges). Once they have undergone these challenges they win a boon, together with a sense of self-realization or atonement

(think at-one-ment), after which they are able to return to their world with a gift (not dissimilar to the Ndembe initiate returning to a new world with the status of a man). Campbell saw the hero's journey mirrored in the challenges of human existence when facing unknowns. Important in the phase of flux is the transition from the individual state of being to this state of atonement with Being – the source of all life (Campbell 1993).

This idea of leaving behind the world as we know it, entering and exploring a liminal world as a site for the possible, and returning to a renewed life and world enriched with a higher purpose, not only plays into the themes of possibility studies (futures, social, and individual transformation), it also mimics the three-act structure of Van Gennep's – and indeed has helped inspire many three-act structures in thousands of films, from Hollywood and beyond (Vogler 2007). With ideas of liminality so closely woven to notions of exploration, discovery, (and self-discovery) and the unknown, they unveil a curious dimension (and questions) around how to enable and amplify the "possible" by purposefully entering liminal times and states to catalyze new forms of understanding. Campbell's work also helps us understand transformative cognition, which supports the idea that transformative experiences make profoundly significant changes to core beliefs possible, and change what we know and value about the world.

Liminality, Utopias, and the Possible

Possibility studies is inherently rich with potential – opening up a kind of "possibillionism" as it relates to so many fields. Exploring the possible allows us to examine what could be, what is to come, what might have been, and what is not or might never be (Glaveanu 2021). While Glaveanu's taxonomy of possibilities explores expressions of "being," the idea of "becoming" is inherently linked, and the liminal provides the conditions and context – the time and space continuum – for things to "become" possible.

Models of liminality serve to help us understand societies in transition, where old ways are

being rejected and the new have yet to arrive. This social experimentation with the possible is the work undertaken by utopian societies that experiment with speeding up this transition by creating a liminal society or "ideological communitas" devoted to exploring future possibilities. The word "utopia" was first coined by Sir Thomas More in 1516 with the notion of liminality embedded – as the word utopia came from the Greek word *ou-topos* or "no-place" as well as *eu-topos* or "good place." It was a good place, yet it did not exist, except as a liminal concept. Others have theorized utopias as a place that are "betwixt and between" to use Turner's phrase, and there is a strong sense that they perform the labor of "the possible" by experimenting with multiple perspectives and ways of living in the phase between worlds. Many scholars have identified the utopian society as a group of people who organize their life around shared purposes and are to some extent **separated from the world or mainstream society** (Sargisson and Sargent 2017). In order to conduct the experiment in a future society they are required to occupy a liminal space, much like the Ndembe initiands who took on new ways of being. There are an increasing number of such experiments into the possible. From the nineteenth-century utopian societies through the hippie communes of the 1960s – right through to the third wave of around 10,000 ecovillages spread over 144 countries (Global Ecovillage Network 2021).

Historically, societies have experienced times of relative stability, followed by a period of transition to a new way of organizing, thinking, and being. This is evident in many ways – the Industrial Revolution – or the transition from nomadic to agricultural society. Or the emergence of the Age of Enlightenment. Or even the transition from nomadic to agricultural society. The time "betwixt and between" when society experiments with new possibilities can be seen as a time of liminality. There is flux and uncertainty and disruption as society rethinks its ideals (for example, about whether slavery is appropriate), reorganizes its structures (for example, through the land reforms and Enclosure Acts that contributed to urbanization in England in the 1700s), or reimagines its

technologies (think the emergence of the Internet). All of these liminal phases provoke an intense focus on “the possible,” where people are forced to explore the generative capacity that the liminal phase affords – before new rules and structures and ways of being arrive. Transition studies aim to understand some of these structural changes that are taking place in our world currently, and consider the profound changes that every one of our systems will have to endure if we effectively transition to a sustainable future. Current utopian societies also attempt to create an “ideological *communitas*” for new ways to live. Karen Litfin tries to convey the brave experiment that a utopian society represents in this process of transition, likening ecovillages, and intentional communities to pioneer weeds that reach out into the sands of the deserts we have created – the liminal spaces left destroyed – in an attempt to fertilize the soil for new possibilities. “Typically, the pioneer species are not the most glamorous of plants – think thistle – but their restorative work is absolutely essential. . . . Like pioneer species, ecovillages are preparing the ground for a viable future and we can all learn from their experiments” (Litfin 2014).

Liminality, Learning, and Unlearning

Van Gennep, Turner, and Campbell all wrote about how our society, stories, and culture enable personal transitions and help initiands and heroes navigate unknowns (through mentorship, rituals, social structures, and mindsets.) Liminality and thresholds have been explored in education as a way to understand how learners (think initiands) transform from those who do not know to those who are capable of becoming mentors themselves. In a learning journey there is often a liminal time when knowledge becomes “troublesome.” This encounter with knowledge “renders things fluid, less certain than they used to be, and starts to transform the learner.” It “often feels like a space where you are losing things. . . . it is a space where you have to let go of your prevailing way of seeing, your prior understanding, and your prior schema. That has to weaken or loosen, or be

transformed, in order to gain a newer way of seeing, or newer mode of being.” Letting go of the old way of knowing is hard as “we don’t like letting go of things that we think we have a very good handle on, or that we have become reasonably good at” (Land et al. 2014).

While mentors (wonderful teachers) are important to help initiands and students to do this work, structures are also important. “Third spaces” in education where structural boundaries merge can be disturbing as well as inspiring. For example, a liminal space is created where education transcends institutional boundaries or brings people together with roles beyond the distinctive separation of academic, industry partner, student, or professional staff – instead privileging a flatter hierarchy and mutual learning. Education can also be “a conceptual space” where disciplines come together through transdisciplinary learning exploring “the liminality between epistemologies and ontologies, disciplines and individuals” (Kligyte et al. 2019). Online work in a pandemic serves as another liminal space, as does a virtual internship, or the transdisciplinary liminality when disciplines converge. A kind of in-betweenness emerges, which imbibes these third spaces of learning with qualities of “radical openness” (Soja and Hooper 1993).

As learning through threshold concepts and liminal spaces is infused with qualities of “becoming,” it is important to consider the role of creativity in learning, as creativity is inherently a liminal process. The creative process has all the markers of a liminal experience in the sense that it allows the practitioner to spend time away from the time and space continuum of the ordinary world and ordinary ways of thinking – like the Ndembu initiand. Many writers, for example, speak of a creative process “where their surroundings disappear” (Le Hunte 2010). Stephen Nachmanovitch wrote that all creativity is a form of improvisation, also known as extemporization, meaning both “outside of time” and “from the time.” He believed that “in improvisation, there is only one time” (Nachmanovitch 1990). Csikszentmihalyi calls this state an “extended present.” American poet Mark Strand describes the experience of being in this state as follows:

Well, you're right in the work, you lose your sense of time, you're completely enraptured. . . The idea is to be so so saturated with it that there's no future or past, it's just an extended present in which you're, uh, making meaning. And dismantling meaning, and remaking it. Without undue regard for the words you're using. It's meaning carried to a high order. (Csikszentmihalyi 1996)

The synchronic time that becomes available in this liminal phase of illumination is rich with the generative, serendipitous potential of the possible (Le Hunte 2021).

Conclusion

Traditionally, liminality can be described as a state of flux and discovery – a state of “becoming” – situated between two phases of relative stability. Through this lens, liminality is a moment of transition and transformation – a time and place out of ordinary time or space to negotiate a new stage in life (as explored by Van Gennep and Turner). Liminality can be identified as the middle stage of a challenging learning journey (through the educational lens of threshold concepts and troublesome knowledge). It can also refer to the stage of disruption or experimentation between different stages in societal evolution, as exemplified by the practice of utopian thinking and utopian societies. And it can be seen as a phase between different stages of consciousness (when seen through the transformative journey of the hero).

The notion of liminality was first explored through the work of Van Gennep and Turner as the middle phase in ritual when an initiand is taken from an old world and reinstated in a new one. While the phases in ritual are stylized and structured in these traditional rites of passage and in myths around the world, there is an understanding that any individual who has gone through the liminal phase and come through the other end has traversed a path of some sort of transformation – from a state of not knowing, to knowing, from someone who operates as an individual to someone who operates for the

collective (and even brings a gift to that collective) (Campbell 1993).

Moving beyond traditional societies where the notion of the liminal was first explored, the idea of this interstitial state “betwixt and between” is still relevant. As the flux of personal and social change accelerates well beyond that experienced historically, and as we career toward futures that are more supercomplex and unknowable than previously (Barnett 2012), liminality is amplified and sustained for longer periods of time. In the context of a society in rapid transition, navigating the accompanying unknowns becomes an urgent imperative. As such, the exploration of the inherent creative potential of liminal spaces, as sites to explore “the possible,” becomes a crucial way to invoke individual and social transformation.

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Malevolent Creativity

Mark A. Runco

Southern Oregon University, Ashland, OR, USA

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One key question in this *Encyclopedia of the Possible* is “what is possible,” the underlying interest being, “what might occur in the future?” Some answers to this question are highly optimistic. They may even imply that some sort of utopia is possible. After all, if humanity learns from its mistakes and evolves in the right direction, eventually good will prevail and bad may disappear.

Is utopia possible? Would utopia really be a good thing? It is possible that there is a need for both good and bad in society. This view is suggested by the fact that in some ways humans require contrasts. This is certainly true on a neurochemical level and on a perceptual level (e.g., the receptors in the visual system). It is also too often true cognitively; we sometimes appreciate the good only when we see or experience the alternative. This may be why the definition of utopia usually begins with the word “imaginary,” as in “utopia is an imaginary place filled with good and lacking all bad.” The original description of utopia seems to have been a book by Thomas More, published in Latin in 1516. It is

usually described as a satire, so More himself very likely questioned the possibility of utopia.

Even if utopia itself is impossible or less than completely desirable, society can move in the direction of good. This would involve the reduction or elimination of crime and corruption. Even more broadly, society would be improved by a reduction of malevolence. There remains the question of feasibility. That is because malevolence can be creative, which means it adapts and evolves and finds novel ways to express itself.

This chapter focuses on the questions surrounding malevolence. It summarizes current thinking about malevolent creativity and examines implications for the question of “what is possible.” It begins with some key definitions and a discussion of the history for the concept of malevolent creativity.

Creativity in the Moral Domain

Malevolent creativity has been recognized for quite some time, but it became what might be considered a coherent subfield in about 1993. That is when Howard Gruber and Doris Wallace edited a special issue of the *Creativity Research Journal*, the focus of which was “creativity in the moral domain.” True, there were occasional discussions of immoral creativity before 1993. The best known is that of Rogers (1959) who is famous for his work on self-actualization and

creativity but also recognized “bad creativity.” He wrote:

My definition of the creative process is that it is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his [or her] life on the other. . . It makes no distinction between “good” and “bad” creativity. One man [person] may be discovering a way of relieving pain, whereas another is devising a new and more subtle form of torture for political prisoners. Both these actions seem to me creative, even though their social value is very different. . . Galileo and Copernicus made creative discoveries which in their own day were evaluated as blasphemous and wicked, and in our day as basic and constructive. (Rogers 1959, p. 71, brackets added, italics in original)

Leonardo Di Vinci could be mentioned here, given that he designed so many weapons and instruments of war (Runco 2007). They were highly creative and designed to harm or even kill.

Not all malevolent creativity is intended to harm. Consider, for example, Spooner’s (2006, 2008) research on graffiti. As Spooner demonstrated, graffiti is often creative and usually illegal. It may damage public infrastructure, at least in a superficial way. Graffiti is not always considered to be malevolent or illegal. Spooner explained the different interpretations of graffiti by emphasizing attitudes. He quoted Agnew (1989) who described how *Zeitgeist* influenced views of bad creativity:

These early views [e.g., Rogers 1959] were eventually rejected or forgotten, not so much because of the accumulation of evidence against them—but more because certain social changes in post-World War II America lead researchers to focus on the positive aspects of creativity. The research evidence, however, suggests that there may be some validity to the early assertions linking creativity and crime and delinquency. (p. 104)

Thus, contextual factors must be acknowledged, especially when thinking about emphases in research (good or bad creativity). And not only did concerns about good or bad creativity change with the times, so too did the science of creativity. Put briefly, the world kept changing, problems became more pressing (e.g., climate crises, medical dilemmæ), and fortunately studies of creativity became more and more scientific. This has allowed objective study of good and bad creativity.

The special issue of the *Creativity Research Journal* mentioned above was titled “creativity in the moral domain.” Its contents are varied, and quite a few of the articles in the 1993 special issue mentioned the antithesis of moral creativity. Some of these referred to immortal creativity, but Robert McLaren (1993) had a different label. He called it “the dark side of creativity.” That label really caught on.

Various case studies were included in the 1993 special issue. One covered individuals known as “rescuers,” their moral creativity being expressed in actions that saved others. This article went into detail about Oskar Schindler, the German businessman whose creative efforts saved a large number of Jews from the Nazis. Other articles in the special issue discussed things like nuclear weapons and computer viruses. Note, then, that there was work on creative people doing moral or immoral things but also work on the results of the creative process.

Creative Products

The creativity research is often separated into work on creative people, the creative process, creative potential, persuasion, creative places, and creative products. The last of these areas is especially interesting because products can often be used in more than one way. Nuclear weapons were possible because there was research on nuclear energy, for example, and computer viruses are possible because of software development and because the Internet is now just about everywhere. The point is that there are sometimes clear benefits to discoveries and inventions, but when taken in an immoral direction, there are also dangers. One creative product can sometimes be used in moral or immoral ways. Is a product that has both beneficial and harmful applications malevolent? The only way to know is to look at the intentions. Why was it created? More will be said about intentions below.

First, it may be useful to summarize my own contribution to that 1993 special issue:

Stephen Carrie Blumberg, a small, wiry, dark-haired man, was convicted in 1991 of stealing books. His was a noteworthy conviction because

he did not just abscond paperbound romances from convenient bookstores. Over a 16-year period, Mr. Blumberg stole in excess of 24,000 volumes—an estimated 19 tons of books from 48 U.S. States and throughout Canada. The value of these books was estimated to be between \$2 and \$20 million. One of the books Blumberg stole from my alma mater-Honnold Library of the Claremont Colleges—and is worth an estimated \$35,000. It is one of few histories of the world which does not include any discussion of Columbus. It was written in the year 1493... Blumberg is a master of breaking and entering the rare book rooms of libraries. He... knew how to pick locks, fake identification cards... and thwart electronic security systems. He was adept at scaling rooftops and dumbwaiters to gain access to hidden collections. One associate described the 130-pound, 5-foot-9 man as ‘Spiderman’... When the FBI raided Blumberg’s home, they found books everywhere—and 50,000 antique brass doorknobs. He had a passion for books and antique doorknobs. Blumberg is a talented individual, but clearly his talent gone astray. Too bad he is not more like the superhero Spiderman and ‘a good guy.’ But for that matter, it is also too bad that Hitler did not use his skills of persuasion to socially beneficial ends. There are many examples of persons with great talent but immoral or otherwise undesirable tendencies. Indeed, one argument in the present article is that creative talent and morality are largely independent. (p. 17)

At about the same time as the publication of the special issue of the CRJ, devoted to creativity in the moral domains, Gardner, Csikszentmihalyi, and Damon published an interesting volume on *humane creativity*. This is a different label for moral or benevolent creativity. That volume (and the subsequent volume by the same authors from 2008) also indicated that the interest in creativity and morality (and malevolent creativity) grew. Not surprisingly, increasingly rigorous methods were brought to bear on the topic. Indeed, psychometrically sound measures were developed that focused on malevolent creativity. Some of these estimate both benevolent and malevolent creativity, but several focus on the latter.

As a matter of fact, this is one curious trend that can be seen if you stand back from the research and consider what has been published since McLaren’s article (1993) on the dark side. More and more articles focused on the dark side and fewer and fewer on moral creativity. There was,

for example, research on the creativity of criminals (Brower 1999; Eisenman 2008) and various investigations of the particular personality traits – the so-called dark triad – underlying malevolent creativity. That dark triad of traits includes psychopathy, narcissism, and Machiavellianism. Just to summarize one investigation, Kapoor (2015) assessed each of these and a composite of them, as well as several measures of creativity, to a small group of Indian adults. He reported that indicators of positive creativity were correlated with narcissism, while negative creativity was correlated with psychopathy. Lee and Dow (2011) also reported relationships between personality and malevolent creativity.

It is no surprise that personality has been tied to benevolent and malevolent creativity. What may come as a surprise is that even though the initial interest was in creativity in the moral domain (Gruber and Wallace 1993) and humane creativity (Gardner et al. 2008), for at least 20 years now, more research has been focused on immoral creativity and the dark side than on moral creativity. This may not be all that much of a surprise when you consider that malevolence is generally more salient than morality and benevolence. Just look at television: how many crime shows are on the air? Look at the news, where human interest stories are far outnumbered by the more sensational crimes and crises. Humans have an inborn tendency to attend to salient information, and malevolence is by and large more salient than benevolence. This may partly explain why more research has been done on malevolent creativity than on benevolent creativity. Or perhaps it is just that malevolence often reflects something that should be eliminated, a problem that must be solved.

It is easy to offer additional examples of the broad interest in malevolence. Dow (2015) investigated *cryptomnesia*, a form of plagiarism, as related to performance on various creative tasks. She found that individuals with limited knowledge – simply put, novices – were more likely to suffer from cryptomnesia than more experienced individuals. Cognitive load played a role (i.e., how much information was being processed at any one time) as well. Interestingly, Dow did not rely on the written word but had visual and

auditory tasks and stimuli as well as verbal. When a design task was used with novice and expert engineers, the presentation of an example had an impact, but only for the less experienced participants.

Cryptomnesia was defined by Dow (2015) as inadvertent plagiarism. If plagiarism is advertent, it is immoral; but if it is inadvertent – and thus satisfied the definition of cryptomnesia – it is not immoral. It could be an accident, but in any case the individual was not trying to cheat. Recall here what was said above about the role of intentions.

There are other clear examples of creativity used intentionally to harm or for personal gain. Cropley and Cropley (2011, p. 313) explored *lawbreaking*:

some lawbreaking involves generation of highly effective—even admirable—novelty, and some lawbreakers display psychological characteristics typically associated with creative individuals, so that a deficit model is inappropriate. Creative lawbreakers and law enforcers can be conceptualized as competitors in much the same way as businesses are competitors, and this suggests a fresh way of looking at law enforcement.

Yet another variety of intentional and malevolent creativity is apparent daily, in the USA, since 2016. That is when a very different administration was installed in Washington DC and “for-profit politics” became the norm. Certainly politics has always had a creative streak, well before 2016. An obvious example of this is “spin,” where the most euphemistic message possible in what might seem to be bad news is shared with the public, the spin being a creative interpretation of the facts. But since 2016 the Washington Administration has taken this to new heights. Detailed discussions of this political creative malevolence have been presented by Runco (2017, 2019) and Sternberg (2017).

Empirical work in this general direction was reported by de Saint Laurent, Glaveanu, and Chaudet (2020). They examined verbal products for creativity and malevolence, but unlike previous research, their focus was on tweets. de Saint Laurent et al. were particularly interested in the anti-immigration content of tweets. Anti-immigration has been one of the foci of the current administration in Washington DC, and quite

clearly the efforts are contrary to laws allowing asylum and legal immigration. de Saint Laurent et al. used an innovative method; they examined:

112,789 anti- and pro-immigration tweets, having identified target tweets based on specific hashtags. Interestingly, analyses indicated that malevolence in tweets is quite distinctive and those posting these tweets ‘employ a series of specific strategies in creating echo chambers online’. (p. 66)

An example strategy uses new slogan and word variations that signal the group identity of the individual posting the tweet and thus build community within the anti-immigration segment of the population. Given the popularity of Twitter, more research should be considered. The methodology is impressive. Just look at the data set: 112,789 tweets.

Measures of Malevolent Creativity

Other new and innovative methods have been developed to empirically study malevolent and benevolent creativity. Here again, it appears that there is more interest in the former than the latter.

At this point there is no shortage of measurement options. A handful of studies have used some form of divergent thinking to get at the dark side and negative creativity, while others, mentioned above, have used some sort of personality assessment (usually targeting the Dark Triad).

The *Malevolent Creativity Behavior Scale, MCBS* (2016) was developed to measure ideas about malevolence rather than the relevant personality traits. It is an extension of an existing measure of ideational behavior (Runco et al. 2000). The original measure was developed as a criterion for divergent thinking tests, outside of the context of malevolent creativity. Divergent thinking tests are open-ended and ask examinees to generate ideas, options, and alternatives. They often encourage examinees to be original. The tests provide scores for fluency (how many ideas a person produces when solving a presented problem), originality (how many statistically rare ideas that person produces), and flexibility (how many conceptual categories are used in all ideas

produced). Divergent thinking tests are probably the most commonly used measure of creative potential (see a recent review by Runco and Acar 2019), though they are certainly measures of potential. Just because a person does well on a divergent thinking test – or any test purporting to assess creativity – there is no guarantee that the person will in fact be creative when outside of the testing setting.

Divergent thinking tests do have adequate predictive validity, but most investigations of this predictive validity have used dubious criteria – criteria that may focus on creative behaviors which may have little if anything to do with ideation. For this reason, Runco et al. (2000) developed the *Runco Ideational Behavior Scale* (RIBS). It only asks about ideas, not attitudes, traits, or other correlates of creativity, and sure enough, when used as a criterion with tests of divergent thinking, it supports the predictive validity.

It was worth going into some detail about divergent thinking because it is related to the question found in the first paragraph of the present article, namely, “what is possible?” There is an entry in this same *Encyclopedia* that is focused on divergent thinking precisely because it allows people to explore all directions of thought, and this is quite helpful when considering what is possible. As a matter of fact, divergent thinking is most likely to lead to a creative idea when it can go in all possible directions. In other words, people are likely to be most creative if they do not just think about solutions and ideas in one direction but instead consider ideas in what may be a conceptually the opposite direction! Recall here what was said early on in this article about the possibility that utopia is not all good but instead requires antitheses. Divergent thinking allows people to consider antitheses, including options that indicate “what is possible.”

One last point about the Malevolent Creativity Behavior Scale. Its focus is on ideation, but note the “behavior” in its name. That is in the name because the measure also focuses on manifest action. It is not about feelings, or attitudes, or other things that must be inferred from what is observable. The MCBS asks only about observable actions. Admittedly it is a self-report, and

care must be taken with all self-reports because of the potential impact of memory, honesty, and socially desirable responding.

One analysis of the MCBS with a sample of just under 1000 individuals suggested that there are three distinct scales: ideas about hurting people, ideas about lies, and ideas about playing tricks on people. Very importantly, MCBS scores predicted individuals’ malevolent creativity performances as assessed with realistic, open-ended problems.

Kapoor (2015) developed another self-report that estimated the likelihood that the individual would use creativity in a negative fashion. Situations are given on his measure, and respondents use a Likert scale to indicate how likely they are to emit certain behaviors. These are indicative of positive creativity, negative creativity, or neutral (no creativity). Interestingly, the reliability of the negatively creative items was the highest of the three subscales. Recall what was said above about potential problems with self-reports (also see Kapoor and Khan 2016).

One last study fits under the measurement heading and must be summarized because of its implications. This is an investigation using the Alternative Uses divergent thinking test. Dumas and Strickland (2018) examined responses to Alternative Uses and developed a scoring system that identified malevolent ideas (e.g., hitting someone over the head with a book as a “use for a book”). Dumas and Strickland reported that males were significantly more likely than females to be malevolent, at least on these particular tasks, and respondents who were more original were also more malevolent than those who were less original. This finding is consistent with the idea, introduced above, that malevolence is indicative of a general sort of divergence of thought. As a matter of fact the malevolence of the respondents in the Dumas and Strickland investigation could be predicted from the level of originality of the individual giving the ideas.

Conclusions

This chapter focused on malevolent creativity but started with a discussion of the opposite, namely,

benevolent creativity, or what was early on called creativity in the moral domain. Importantly, that early research uncovered what may be the key element, namely, *intentionality*. Both Gruber (1993) and Runco (1993) argued that intentions must be taken into account whenever creative morality is discussed. Intentions are also key when there is an interest in separating benevolent from malevolent creativity, as well as negative creativity. Simplifying slightly, some creativity is harmful, but not intentionally so. The creator may have been focusing on an original product and the malevolent application a by-product. Other times the harm is attributed by an audience but was not part of the creative process used by the creator, in which case the creative effort was not malevolent. This is better called *negative creativity* (Clark and James 1999). The examples mentioned earlier, where work on nuclear energy also led to nuclear weapons, would fit here in that the original intent was to benefit humankind rather than bomb it.

A small point about the vernacular. First, the label intention is not always used in the research. Cropley, Cropley, Kaufman, and Runco (2010), for example, defined malevolent creativity using a different term. They referred to the *deliberate* use of creativity to harm others. Second, there are different perspectives on benevolent or moral creativity as well as different labels. Furnham (2015) suggested that there is a *bright side* as well as a dark side to creativity. He supported this idea with an investigation using both personality measures and a test of divergent thinking. Unlike most other research, he sampled managers – over 4000 of them. Importantly, his analyses confirmed that the dark triad of personality traits offered information that is not found in broader batteries used to assess personality (e.g., the Big Five, which measures openness, neuroticism, extraversion, agreeableness, and conscientiousness). Openness seemed to be most important for the bright side of creativity.

Are there really dark and bright sides? A few years ago I wrote a chapter titled “creativity has no dark side.” The thesis was that there is one creative process and that it allows individuals to construct original and effective solutions and ideas. These solutions and ideas might be

benevolent or malevolent, but the process is the same – and value-free. The difference between benevolent and malevolent creativity, in this theory, is in how values direct the process (through intentions). Someone who values harmony and cooperation, for example, is likely to use his or her creative capacity to find original and effective methods for socially useful solutions. Values can be separated from the creative capacity, however, which is what led to the conclusion that creativity has no dark side. Creativity is the process that leads to original and effective ideas, and it may be directed one way (benevolence) or another (malevolence).

The view that “creativity has no dark side” is one of various perspectives. Another is that creativity merely occurs and that much of what is labeled “dark,” malevolent, or deviant is a reflection of the attributions by some audience and not inherent in the work itself (Runco 1995; Spooner 2008). As Spooner put it:

creativity may be channeled through various avenues and applications and, by its very nature, it will, at times, be judged as either socially acceptable or nonacceptable. (p. 129)

The phrase “at times” is a reminder about one point made earlier, namely, that context and Zeitgeist are relevant to definitions and judgments of malevolence.

Now we can turn back to the provocative question that opened this chapter, namely, that it is possible that malevolence may be necessary. It may be unavoidable because some of it is creative and adapts, but it is also possible that even a utopia requires the interplay of benevolence and malevolence. That being said, society is at present no where near a desirable balance. There are wars, starvation, injustice, bigotry, and crime all over the globe. It is even possible that society is moving farther and farther away from utopia. Society is in many ways moving deeper and deeper into trouble. At the same time, there are many reasons to celebrate. Life expectancy is increasing, for example, and many diseases are being cured or even eradicated.

This may be explained by the fact that malevolence may be a natural and even necessary feature of society. It certainly is necessary if we want

creativity and innovation. As mentioned above, creativity requires consideration of a wide range of options. If the process is constrained such that only certain kinds (e.g., moral) of ideas are considered, there will not be as much creativity because thinking will not be as divergent. If you allow it to be divergent, there will be a wider range of options and more creativity, but some of the ideas will be malevolent and some benevolent.

Cross-References

- Creativity
- Divergent Thinking
- Genius
- Open-Mindedness
- Openness to Experience

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The Matrix of Maybe

Roy F. Baumeister¹, Heather M. Maranges² and Hallgeir Sjøstad³

¹University of Queensland, Brisbane, Queensland, Australia

²Wake Forest University, Winston-Salem, NC, USA

³Norwegian School of Economics, Bergen, Norway

Abstract

The matrix of maybe can be defined as a way of conceptualizing the future, either imminent or distant, as a set of options, only some of which will come true. The “maybe” is meant to invoke not only the options readily available but also the uncertain nature of their consequences. For example, people may choose a job or a spouse from among several options, but making the decision brings a new set of possibilities (*maybes*). The selected job or spouse could in turn lead in various different directions.

Keywords

Possibilities · Multiple possibilities · Decision · Choice · Future · Prospection

Synonyms Multimaybe matrix (*see Matrix of Maybe*)

Introduction

The notion of a “matrix of maybe” (or multimaybe matrix) emerged from research and theory regarding how people think about the future. It encapsulates a view of the future as containing multiple alternative possibilities, indeed multiple *sets* of alternative possibilities.

There are two main competing theories about the future. The tension between them can be seen both in the everyday actions, thoughts, and feelings of ordinary people and in high-level theoretical disputes among experts. One of them views the future as a single path, and what happens is largely or even strictly inevitable. The alternative is the matrix of maybe, in which the pathways into the future have many forks at which things could go in different directions.

Although the indeterminate nature of the future may seem intuitively obvious, it has been disputed throughout history by various assertions of the single-path view. Fortune-tellers and prophets from ancient times asserted that the future could be known in advance. Religious views of predestination invoked divine omniscience to deduce that the future is already determined. Even scientists and philosophers have argued that the laws of nature leave nothing to chance, and so everything that happens is inevitable (*see Determinism entry*).

Meanwhile, the multimaybe view of the future also has distinguished intellectual precedent. Decision-making theory and classical probability theory assume that the same present is compatible with multiple possible future outcomes. Existential philosophy developed the concept of an “ontological horizon,” which means all the future outcomes that can be reached from one’s present point in space and time (e.g., Heidegger, 1927). Social psychology, a field that studies situational influences on human behavior, has often studied aspects of situations that are defined by multiple possibilities, such as threat, opportunity, having an escape option, varying amounts of freedom and

choice, competition, cooperation, contingencies, responsibility, and power relations. That is, both social psychology and decision research typically presume that humans are capable of making choices among competing alternatives.

The ability to imagine the future as containing multiple alternative possibilities is a recent evolutionary innovation and may be unique to humans. An experiment by Redshaw and Suddendorf (2016) offered a convincing test of this idea by using a vertical tube that had two openings at the bottom, left and right. Treats were dropped into the top and came out the bottom whereupon they fell into a hole and were lost unless caught by hand. To be sure of catching the treat (rather than just getting it half the time, based on guessing), one had to use both hands, one for each opening. Human 2-year-old children could not master this, but the 3- and 4-year-olds quickly mastered the task and got the treat every time. In contrast, adult chimpanzees, gorillas, and orangutans never figured it out. They continued to guess with one hand instead of using both. The implication is that our smartest and closest animal relatives are unable to think of even the very near future as containing multiple alternative possibilities in such a way as to enable them to prepare for both — unlike human children (past the age of 3), who succeeded where the apes failed.

The matrix of maybe is specifically understood as pertaining to the future and not the past. To be sure, there are instances of uncertainty about the past, such as when a trial seeks to ascertain whether the defendant had indeed committed a particular crime. Yet the assumption is that there is an objective, unchangeable fact (either the person really did or really did not commit the crime), and the uncertainty lies solely in present knowledge about it. The multimaybe future, in contrast, is assumed to genuinely contain alternative possibilities.

Evidence for the multimaybe matrix in ordinary people's thinking was reviewed by Baumeister et al. (2018). People act as if the future is more changeable and more controllable than the past, even when subjective knowledge is equal. For example, people will bet more on a sports event that has not happened yet than on one that

is over, even though they are fully unaware of the outcome in either case (e.g., Brun & Teigen, 1990). People also seem to believe that they will have more free will in the future than they had in the past (Helzer & Gilovich, 2012), which may clarify the importance of present action. Indeed, planning is based on knowing that multiple futures are possible, so that it is helpful to make plans that will produce the desired outcome. Precommitment devices, such as a savings plan that automatically takes money from a paycheck and deposits it into a savings account, deliberately restrict the matrix of maybe so as to improve long-range benefits (having money for future purposes) by eliminating some tempting options in the near present (such as to spend one's entire paycheck on current activities). On average, people who use precommitment strategies tend to reach their goals more often than those who do not (Duckworth et al., 2018).

An implication of the precommitment benefits is that having more possibilities is not always or necessarily better. By and large, people do prefer to have more options and greater freedom. But there can be too many choices or options in general, and there can be particular options that cause trouble (and hence would best be eliminated).

Furthermore, traits such as optimism rest on a matrix of maybe. Optimism applies in situations where both good and bad outcomes are possible (and subjectively boosts the probability of a good outcome). Recent work suggests that future optimism is intuitive, as the first expectation that comes to mind is anchored on what the person *wants* to happen (Sjåstad & Baumeister, 2021). When engaging in a slower process of conscious reflection, second-guessing the future so to speak, humans can simulate a broader set of alternative possibilities which also include undesirable scenarios and what can go wrong (see also: Bear et al., 2020).

Morality is of particular relevance for the matrix of maybe. Moral judgments essentially ask whether the person should have done something different, and so they mainly apply in situations with multiple possibilities. If the person did not have alternatives, moral responsibility and condemnation are much reduced. Likewise, the

most discussed and researched moral dilemmas also rest on a matrix of maybe, as in multiple alternatives among which the person must choose. As two classic examples, people debate whether a poor man should steal medicine to save his sick wife's life, and whether a person should flip the switch to divert a runaway trolley to an alternate track, where it would kill one person rather than the five who are in its current path. Without a future of multiple possibilities, there would be no meaningful "dilemma" or real choices to be made, and in consequence, little room for personal responsibility. In contrast to that view, it is a widespread assumption that people *do* have an element of choice, which explains why the average person is inclined to moralize these actions by prescribing appropriate rewards and punishments. Indeed, people view others as less moral and less trustworthy to the extent that they even look like they have failed to exercise volitional will rationally (i.e., are obese and assumed to have failed to use self-control; Maranges et al., 2021).

Human beings are not only able to imagine various alternate future scenarios that could ensue from their current actions. They are also able to evaluate these. Damasio (1994) reported cases of people with brain damage that prevented emotional responses. These patients were still able to mentally imagine the full variety of possible future actions and consequences — but they had considerable difficulty making up their minds as to which was the best choice. This has led to the theory that an important function of human emotion involves imagining the future and anticipating how one will feel. For example, people may avoid actions that they deem likely to bring feelings of guilt or regret, whereas they may choose to act in certain ways based on anticipating that these will bring joy and satisfaction (Baumeister et al., 2007).

Having multiple options is widely seen as desirable. Already in the 1960s, social psychologists had shown that people dislike having their options restricted and will resist, sometimes aggressively (Brehm, 1966). Studies of decision-making show that people like to preserve their options, even to the point of being willing to pay

something to keep options available — even though they think it is unlikely they will use those options and in fact do not take them later in the experiment (Shin & Ariely, 2004). Even a false belief that one has an escape option and could terminate a bad situation reduces the amount of stress people feel (Glass et al., 1969). Although some of these findings may appear irrational or self-defeating when considered in isolation, they are part of a larger pattern of mentally preserving the future as a set of alternative possibilities. In short, humans are able to construct the future as a *matrix of maybe*, and thinking this way is generally helpful in planning, decision-making, and social life.

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Measurement Error

► [Error](#)

Meditation

Rick Repetti
Kingsborough Community College of the City
University of New York (CUNY), Brooklyn, NY,
USA

Abstract

This entry provides an introduction to the history, methodology, philosophy, science, and various types of meditation, which most traditions and practitioners view as broadening the range of transformative human possibilities and invoking exceptional human experiences. “Meditation” is a multiply ambiguous term, referring to a broad range of practices and mental states, many of which share common elements, such as heightened, focused, or tranquil awareness. While meditative states can arise spontaneously (Dass, *Journey of awakening: a meditator's guidebook*. Bantam Books, New York, 1978), meditative traditions teach that a practice of engaging in meditative discipline increases the likelihood of bringing about meditative states. For example, one common meditation practice, one-pointedness, consists of training one's attention to remain focused on a singular object, such as the breath, although any focal point will do. Long-term practitioners

report that this practice tends to bring about states of mental quiescence. Various forms of meditative practice have been associated with most of the world's major religious and spiritual traditions, particularly Buddhism, Hinduism, and Taoism, but monotheistic religions consider prayer a form of meditation. Alongside Yoga, which involves a form of meditation, secular forms of meditation have become increasingly popular in recent years, most prominently mindfulness. Jon Kabat-Zinn popularized mindfulness by creating MBSR, mindfulness-based stress reduction, an 8-week meditation program that studies have shown to have significant results reducing stress. Mindfulness alone has become a multi-billion-dollar industry, a fact bemoaned by traditional practitioners and others, who object that the practice endorses the idea that the appropriate way to deal with external stressors, such as societal injustice, is to alter one's internal responses, as opposed to altering external conditions. This entry examines all of these ideas in some depth.

Keywords

Mindfulness · One-pointedness · TM · MBSR · Philosophy

The term “meditation” is multiply ambiguous. Prior to the recent popularity of seated, eyes-closed meditation, the term has been used traditionally in the West to refer to a kind of philosophical, literary, or otherwise intellectual reflection or treatise, either in general or on a particular topic, as in Marcus Aurelius's *Meditations* or Rene Descartes's *Meditations on First Philosophy*, respectively. Aurelius's *Meditations* consists of standard journal entries, a reflective practice encouraged within Stoicism, the ancient Greco-Roman philosophical school of thought most widely known for advocating acceptance, although that view is partial and misleading. The key insight of Stoicism is the distinction between what is and is not within the range of our control, with an emphasis on what we can control together with an acceptance of what we cannot. The Stoic practice of nightly reviewing and

journaling about the day in retrospect is meant to call to light ways in which one can more effectively manage what is within one's power and accept what is not. Descartes's *Meditations on First Philosophy* is a complex philosophical work that encourages deep reflection on our beliefs, presuppositions, and the grounds of knowledge (Descartes 1993). The more widespread, recent usage of the term refers to a broad range of contemplative practices exemplified by practitioners of Yoga, Buddhist monks, and just about anyone else typified by sitting with eyes closed and legs crossed, engaging in some sort of metacognitive activity involving paying heightened attention to their breath, thoughts, bodily sensations, or chanting a mantra, engaging in prayer, repeating affirmations, or breathing in a controlled manner, among many related practices designed to bring about altered states; see the entries on ► [“Flow”](#), ► [“Spirituality”](#), and ► [“State of Consciousness”](#) in this Encyclopedia. It is this latter meaning that is the focus of this entry, although both meanings share conceptual elements and thus will be explored.

It is philosophically challenging to completely identify all and only those elements in common across these different uses of the term, but one Buddhist meditation teacher's definition of mindfulness meditation might suffice: “*extraordinary attention to ordinary experience*” (Dena 2003); see the entry on ► [“Mindfulness”](#) in this Encyclopedia. By “extraordinary” here, all that is meant is “more than ordinary,” or “heightened,” as opposed to “spectacular,” although some meditative states are spectacular. Thus, Aurelius, Descartes, the Buddha, and the multitude of yogamat-carrying contemporaries are all practicing forms of meditation, whether reflecting on the day behind them, the justification of beliefs, the nature of existential confusion, or stress-reducing somatic practices, respectively. Mindfulness is the contrary of mindlessness, a significant absence of awareness of what one is doing or experiencing. There is a spectrum of mental states, roughly, from mindless to mindful, and any state of mind that is not completely mindless exhibits some degree of awareness; cf. the entry on ► [“Mind Wandering”](#) in this Encyclopedia, however, on

the benefits of distraction and the idea that mind-wandering is a feature of a healthy mind rather than a bug. But the mere presence of an element of sentience or awareness is not necessarily indicative of a meditative state. Thus, the qualifier, “extraordinary,” in the simple compound sense of that term, “above ordinary,” captures the inclusive meaning of “meditation” – *heightened* awareness.

Despite the inclusive sense of the term covering the spectrum of its overlapping senses, some nonetheless divergent uses of the term appear at odds with each other. Some yogic forms of meditation, for example, involve eliminating thought, whereas some philosophical forms of meditation involve heightened states of discursive analysis. From the perspective of each of these, the other seems opposite, yet both involve heightened awareness, marked differences notwithstanding.

Traditional Western and Related Senses of the Term

Anything from a short poem to a book-length treatise on any subject can appropriately be entitled a “meditation on” that topic, e.g., violence, love, leisure, etc. Many of the entries in this Encyclopedia may be considered meditations in this sense; see, e.g., the entries on ► [“Liminality”](#), ► [“Emotion”](#), or ► [“Daydreaming”](#). Prior to the explosion of interest in Eastern forms of meditation, this usage of the term was perhaps the most popular one in the West. This entry focuses on Eastern meditation, but the above-mentioned works of Aurelius and Descartes, which have this more generic meaning, will be explored in some detail because they also capture elements of the broader meaning of the term.

Aurelius and the Stoics

Aurelius and other Stoics encouraged nightly journaling as a contemplative, reflective practice designed to heighten awareness of the distinction between what can and cannot be controlled, which they refer to as “the dichotomy of control.” The serenity prayer is based on this idea:

God, grant me the serenity to accept the things I cannot change; the courage to change the things I can; and the wisdom to know the difference.

The Stoics also engage in meditation practices that more resemble Eastern practices, such as “*pre-meditatio malorum*,” a morning practice whereby one visualizes the day ahead, imagines how something could go awry, and anticipates ways of responding skillfully. Another practice similar to Eastern meditation, the “*big picture meditation*,” involves visualizing the infinite cosmos, both spatially (infinity) and temporally (eternity), and viewing one’s place in life *sub specie aeternitatis*, thereby putting things in perspective; see the entry on “Simulation” in this Encyclopedia. (There are similar Buddhist and Hindu meditations on space and time.) Stoicism is undergoing a contemporary revival in the West (Pigliucci 2017), likely due to its resembling Buddhism, on the one hand, while being agnostic, naturalistic, and Western, on the other hand.

Rene Descartes and Other Philosophers

Descartes’s *Meditations on First Philosophy* contains six philosophical reflections on the nature of our knowledge of reality. His first meditation, “Of the Things That May Be Called into Doubt,” calls attention to the fact that he finds himself possessed of countless beliefs, many of which he realizes have been wrong, and notes that if one can doubt any particular belief or class of beliefs, such as those based on perception, then those beliefs may be incorrect. Implicit is the idea that knowledge is certain, doubt is uncertain, the same belief cannot be both certain and uncertain, and thus if one can doubt a belief, one does not know it to be true. Descartes then uses this “method of doubt” to test all of his beliefs, differentiating between those he can and cannot doubt, and attempting to establish a new philosophy built on solid, indubitable foundations; see the entry on “Uncertainty” in this Encyclopedia. Descartes notes that this sort of contemplation requires inactivity and solitude. Deep reflection on the nature of reality counts as meditation in the inclusive sense of extraordinary attention to ordinary experience; see the entries on “Inquiry,” “Reality,” and “Wisdom” in this Encyclopedia. All philosophical inquiry does, arguably.

Monotheistic Religious Traditions and Related Contemplative Practices

Within the Abrahamic monotheistic religious traditions (Judaism, Christianity, and Islam), prayer is considered a form of meditation, precisely because mindless repetition of phrases that constitute the content of prayers is technically not considered actually praying, but simply repeating words without thought. Thus, unlike certain Eastern meditation techniques that aim at stopping thought, prayer is discursive: the meaning of the prayer is central. However, prayer and mantra, the repetition of a prayerful word or phrase, can overlap, if both lead to trance-like states. In an embodied form of prayer, whirling dervishes, Muslim mystics of the Sufi order, dance in a circular pattern, aspiring to enter a state in which discursive thought is replaced by spiritual communion or grace. Similarly, in Hasidic Judaism, swaying during prayer is a way of intensifying devotion and triggering ecstatic spiritual states, as are prostration, kneeling, and other bodily movements in many religions, as well as in Yoga, Tai Chi, Chi Kung, etc. Tribal dance, enhanced by chanting, drumming and related musical forms, seems to be a much older if not more universal practice among native peoples the world over, suggesting a deeper connection between bodily movement and spiritual aspiration; see the entries on “Possible in Religion,” “Trance,” and “Spirituality” in this Encyclopedia. On some views, all spiritual practices are rooted in the same experience (Patyaying 2008).

One meditative practice in Western religious traditions that may move from the discursive to the nondiscursive is *lectio divina* (“divine word”), engaged by working through a scriptural passage in three stages: First, the passage is read aloud; second, silently; and third, the practitioner becomes receptive to any impressions arising therefrom by dwelling upon its meaning, guided by the spirit. A similar practice involves sitting quietly, listening to “the still, small voice within.” There are many variations on these practices (Zajonc 2009).

Traditional Eastern Senses of the Term

The Taoist philosophy of the natural balance between, and ultimate unity of, all polar

opposites, represented as *yin* (–) and *yang* (+) forming a circular unity, informs Taoist meditative practice, as well as Chinese martial arts such as Tai Chi, flowing yogic practices such as Chi Kung (see the entry on “Flow” in this Encyclopedia), and medicine such as acupuncture and herbal remedies. Tai Chi and Chi Kung function as embodied meditation in motion, not unlike Hindu Yoga, Hasidic davening, Sufi whirling, etc. Taoist meditative practices resemble yogic practices insofar as they involve breathing exercises, bodily movements, and postures.

The two related Asian religious philosophies that take meditation to be the supreme spiritual vehicles, however, if not spiritual sciences, are Hinduism and Buddhism. Indian art depicts yogis in meditation poses as early as 5,000 BCE, and Vedic scriptures, thought to be compiled after centuries of oral tradition, mention meditation several centuries before the life of the Buddha. The standard historical view of the relationship between Hinduism and Buddhism is that the latter is a modification of the former, based on the above and the fact that the Buddha himself claims to have learned yogic meditation techniques from two then-traditional teachers. The techniques he attributes to his teachers closely resemble those described in the *Yoga Sutras* of the Indian sage Patanjali around 150 BCE, which may be described as concentrative. The Buddha claimed that while those techniques brought him into deep meditative trance states (see the entry on “Trance” in this Encyclopedia), they did not bring him to full enlightenment. His teaching emphasizes their necessity, but that they alone are insufficient as meditation techniques. What else is needed, he taught, was a more expansive technique, mindfulness, among six other (nonmeditative) factors constituting his eightfold path for attaining *nirvāṇa*, spiritual enlightenment. Because this entry is primarily about meditation, the other six factors in the Buddhist eightfold path will be set aside.

Concentrative meditation, also known as one-pointedness, constitutes the main form of yoga meditation, although there are other forms of Hindu meditation. One-pointedness and mindfulness meditation, also known as open monitoring, constitute the two main forms of Buddhist

meditation. There are significantly different understandings and thus different descriptions of both techniques, and many variations on each, at least as many as there are different forms of Hinduism and Buddhism. For that reason, however, the focus here must be at a certain level of abstraction that glosses over such differences, not to suggest that such differences do not matter to practitioners of differing traditions – they do, but such differences do not bear on this analysis.

Simplifying for purposes of understanding, one-pointedness involves focusing attention narrowly on any single attentional object, such as the breath, a candle flame, or a word; mindfulness involves focusing broadly on any and all phenomena that enter the field of awareness or stream of consciousness. With one-pointedness, the intention is to maintain attentional focus on the chosen attentional target, which is always some narrow subset of the total field of awareness: whenever attention slips out of focus from the narrow target, one intends to notice that and redirect attention to the narrow target. With mindfulness, the intention is to maintain attentional focus on the attentional target, which is always whatever is occurring in the entire field of awareness: whenever attention slips out of focus from the broad target, one intends to notice that and redirect attention to the broad target. This technique is sometimes described as open monitoring, witnessing, or bare seeing. Because both techniques involve maintaining attentional focus, one narrowly and the other broadly, they may be considered ultimately two aspects of the same technique.

In both Yogic philosophy and Buddhism, one-pointedness is thought to lead to deep trance states of mental quiescence; see the entry on “Trance” in this Encyclopedia. In the opening line of the *Yoga Sutras*, for example, Patanjali claims that the essence of Yoga is this: *yoga citta vritti nirodha* (*yoga*: union; *citta*: consciousness; *vritti*: perturbations/fluctuations; *nirodha*: cessation) – meditative union is brought about by the cessation of thoughts. Patanjali goes on to describe various modifications of this technique thought to lead to different forms of spiritual fruition. In Buddhism, one-pointedness is the primary technique for bringing the practitioner into meditative trance

states of mental quiescence (Pāli: *jhāna*; Sanskrit: *dhyāna*), thought to signify stages of spiritual fruition. Different forms of Buddhism emphasize one or the other technique, or unite them.

One form of Zen meditation practice, “just sitting,” may be described as open monitoring, the broader form of practice associated with mindfulness, but other forms of Zen practice involve focusing on breathing, which involves one-pointedness. Tibetan Buddhist meditation techniques, however, can be complex, similar to some forms of Yoga meditation, involving a combination of one-pointedness practices, such as taking certain bodily postures, visualizing “chakras” (psychic energy centers similar to acupuncture points), chanting mantras, and controlled breathing, among other complex techniques; see the entries on “Possible in Religion” and “Spirituality” in this Encyclopedia.

Meditation techniques play a prominent role in Hinduism, Buddhism, and Taoism. Apart from monastics within these traditions, however, most Hindus, Buddhists, or Taoists do not practice meditation on a regular basis, contrary to popular assumptions (Flanagan 2011; Sharf 2014).

Contemporary Western Senses of the Term

There has been sporadic contact between Asian meditative traditions and the West as far back as the Alexandrian empire (Beckwith 2015). Schopenhauer, Thoreau, and Emerson, among other prominent Western intellectuals, were attracted to Eastern meditation. Swami Vivekananda, Swami Yogananda, and Shunryu Suzuki were among some of the first early representatives of Eastern meditation practices who came West between the nineteenth and twentieth centuries. Next, the Beat generation took an interest in Zen, followed by the Beatles’ flirtation with the Hindu guru, Maharishi Mahesh Yogi, who taught TM, transcendental meditation, spurring a wave of broad cultural interest in Yoga and meditation, which included Richard Littleman’s TV series *Yoga for Health*, Ram Dass’s popular book *Be Here Now*, Robert Pirsig’s classic novel *Zen and*

the Art of Motorcycle Maintenance, Swami Satchidananda’s appearance at Woodstock, the Hollywood celebrities’ guru Swami Muktananda, and, among others, Swami Prabhupada’s appearance at be-ins, introducing the Hare Krishna chant. A more recent wave of interest was sparked by celebrities like Oprah Winfrey, who invited various representative figures onto her popular TV show, including Deepak Chopra, Eckhart Tolle, Ram Dass, and others (Hammond 2018).

In 2013, the music of Krishna Das (Jeff Kagel), a renowned *kirtan* (meditative devotional chanting) master celebrated in the global Yoga community, was nominated for a Grammy Award for Best New Age album. Yoga and meditation are now mainstream: many millions of Westerners practice some form of meditation, and as many if not more practice some form of Yoga. The most popular forms of meditation appear to be TM, mindfulness, and Zen. TM consists of a private, personalized Sanskrit mantra (word or phrase) repeated in sync with the in-breath and out-breath, while sitting still with eyes closed, for about 20 minutes, once or twice daily. Studies suggest TM is effective with stress reduction. Dr. Herbert Benson (1975) of Harvard studied practitioners and extracted a generic, secular version of the practice using any word or phrase, which he termed “the relaxation response”, with similar results.

The broadest dissemination of meditation techniques in the West, however, above Zen, TM, and yogic meditation, owes to Jon Kabat-Zinn’s secular adaptation of Buddhist meditation techniques in his mindfulness-based stress reduction (MBSR) program, as well as his popular books (1994). MBSR is an adaptation of one-pointedness and mindfulness, although the MBSR narrative emphasizes mindfulness. According to MBSR, mindfulness consists of anchoring attention on breathing, which Buddhism considers a form of one-pointedness, while being non-judgmentally mindful of the comings and goings of various elements of consciousness, such as thoughts, intentions, emotions, sensations, memories, and so forth – in short, being present with whatever is, in the moment.

MBSR is derived primarily from a modern Burmese form of early Buddhist (Theravādin) meditation called *Vipassanā*, which literally translates as “insight,” but informally translates as “mindfulness,” since mindfulness is thought to lead to key insights believed to lead to enlightenment; see the “Insight” entry in this Encyclopedia. *Vipassanā* was made popular by Burmese meditation master S.N. Goenka, who modified the more traditional practice to make it more suitable to Westerners (Sharf 2014), a number of which brought it back to the West after taking Goenka’s free 10-day meditation retreats in India in the 1960s and 1970s, including Sharon Salzberg and Joseph Goldstein, founders of the Insight Meditation Society in Barre, Massachusetts, as well as Jack Kornfield, Ram Dass, Daniel Goleman, and other prominent *Vipassanā* teachers and meditation researchers.

In one form or another, mindfulness has become the most widely practiced form of meditation in the West in the past two decades, with many millions of practitioners, several very successful meditation apps, such as *Calm* and *Head-space*, and a multi-billion-dollar industry. Even Sam Harris, the controversial neuroscientist, pop philosopher, and podcast host has a meditation app. Google, the military, the corporate boardroom, various police and fire departments, school systems, sports teams, hospitals, prisons, mental health professionals, and other mainstream societal institutions and prominent public figures practice it.

Objections and Replies

As with anything else, once something becomes prominent, it invites criticism. Criticisms of meditation go back to Gilbert Ryle (1949), the behaviorist philosopher who rejected the idea of introspection on the ground that observing one’s mental state of, say, rage, would interfere with it. Another philosophical objection owes to Robert Nozick (1981), the Harvard libertarian philosopher who argued that, absent any supramundane ideology, the meditative state is of no more significance than the cognitive equivalent of a

soundless stereo system that is on but the stylus is not touching the rotating vinyl. Nozick admitted, however, that what cannot be as easily dismissed is that practitioners who have deep meditative experiences find them transformative, exhibiting powerful altruistic tendencies suggestive of something deeper than the mere experience of what it is like to damp down the cognitive apparatus. In line with Nozick’s observation of altered behavior, a recent meta-study of the 50 most-cited meditation research publications notes that long-term practitioners transition from the enjoyment of altered states to stable altered traits (Goleman and Davidson 2017). Apparently, contrary to both Ryle and Nozick, meditation is not “all in the mind,” so to speak, but it actually alters the brain, body, and behavior, in lasting ways (Begley 2007).

Ryle’s objection is technically valid, but whereas he saw this as a reason to reject meditation as incoherent, practitioners see his point as a reason to embrace it – precisely because calmly observing one’s mental states can have a diminishing influence on their ability to overpower reason, trigger destructive emotion, and propel one into unskillful action (Goleman 2003); see entry on “Emotion” in this Encyclopedia. Indeed, many proponents of MBSR and related meditation techniques appeal precisely to their ability to enhance wholesome forms of agency, if not to diminish weakness of will and increase functionally effective agency or free will (Federman and Ergas 2018; Harvey 2007; Meyers 2017; Repetti 2017, 2019; Wallace 2017); see entry on “Agency” in this Encyclopedia. Departing from the initial skepticism of philosophers like Ryle and Nozick, however, many prominent Western philosophers have begun to embrace meditation and related elements of Asian philosophy (Coseru 2012; Flanagan 2011; Garfield 2015; Repetti 2019; Siderits 2007; Strawson 1986; Thompson 2017). More broadly, academia has increasingly come to embrace meditation and related contemplative practices, significantly due to the work of the Association for Contemplative Mind in Higher Education (ACMHE), a multidisciplinary professional academic association established by the Center for

Contemplative Mind in Society in 2008, which has connected well over 800 educators, staff, graduate students, and administrators in 24 countries.

Apart from Ryle and Nozick's philosophical criticisms of meditation, more recent criticisms are directed at secular meditation, particularly mindfulness, once mindfulness became increasingly popular in almost every segment of Western society. In "Beyond McMindfulness" (2013), Ron Purser and David Loy popularized the term "McMindfulness" as part of a general critique of the embrace of secularized mindfulness practices in Western society. Purser and Loy are both long-term practitioners of Zen Buddhism; Loy is a Zen teacher. Recently, Purser published a book-length version of the argument (2019).

The criticisms amount to two main objections, on analysis, although there are many different versions of both (Burke et al. 2016). The first is that secular mindfulness is a blend of stealth Buddhism, that is, Buddhism disguised as a secular practice, on the one hand, and that it is too watered down to deliver the benefits of genuine Buddhist practice, on the other hand. These two aspects of the first criticism are at odds with each other, so they need not be taken seriously (Repetti 2016). The second main criticism is that the practice fits too nicely with consumerist capitalist culture, thereby perpetuating the inequities of the status quo by transmuting the discordance that might otherwise lead to social change by simply redirecting it through stress reduction techniques that suggest that the proper way to deal with inequities is by adjusting one's internal responses to them, as if they fell into the Stoic category of things that we need to learn to accept but which are truly in the domain of things we can change.

What such criticisms tend to ignore is the fact that Buddhism is equally guilty of this objection, if not more so, as is almost every religion, as history has made amply clear. Religions rarely challenge the status quo. As Jesus famously put it, "Render unto Caesar what is Caesar's." Inasmuch as some forms of mindfulness may be guilty of containing an element of stealth Buddhism, such criticisms of mindfulness arguably involve not-so-stealth ideological elements of

socialist criticisms of capitalist society – not to suggest that there is no merit to any such criticisms, but rather to keep the issues clearly and distinctly apart. Arguably, the Western societal embrace of secular mindfulness – which includes an embrace of neuroscientific research into which forms of meditation produce which empirically verifiable results (Goleman and Davidson 2017), as opposed to simply appeals to pre-modern religious superstitions – promotes more effective individual agency, as opposed to more milk-producing metaphorical cows (Repetti 2010, 2016, 2017, 2019).

Concluding Meditations

To the extent that mindfulness and related meditative practices increase the tendency to be mindfully present in one's moment-to-moment experiences, aware of their meaning and importance, and attentive to their potential implications, as opposed to being so busy multitasking that one is relatively mindlessly juggling between the most momentarily pressing elements of one's experience, meditative practices seem intuitively wholesome. However, recent studies have shown that certain individuals report challenging experiences associated with certain types of meditation, particularly during long-term meditation retreats involving several hours of intensely disciplined daily practice among otherwise non-long-term practitioners (Lindahl, Fisher, Cooper, Rosen, and Britton 2017), as might be expected, ironically, on reflection. However, mindfulness-based cognitive behavioral therapy (MBCBT) and almost every other major form of psychotherapy have endorsed and/or adopted some form of mindfulness as a therapeutic intervention, with positive results (Goleman and Davidson 2017).

Meditation is immensely popular for a reason: for most practitioners, it provides access to an aspect of being that the Taoists would describe as returning to the root of being, being itself, or just being – just sitting, being here now, as the Zen tradition emphasizes. Once Ram Dass – author of the classic *Be Here Now*, former Harvard psychologist Richard Alpert turned psychedelic

researcher, turned Hindu yogi and informal guru to the Baby Boomer generation – was asked what he thought was most salient for him about meditation after teaching and practicing it for the bulk of his adult life. He replied that he noticed its impact mostly by contrast with periods of his life when he was not practicing regularly, when he found himself walking around with a lot of “undigested experiences.” Recalling Nozick’s objection to the effect that meditation is nothing special, if nothing else meditation at least serves this function: it supports existential digestion. As the many other studies cited above suggest, this is perhaps its least effective role.

Finally, the Sanskrit word for “mindfulness” is *smṛti*, which also signifies *remembrance*, a calling to mind, associated with intimate familiarity based on experience. If nothing else, meditation offers the practitioner an opportunity to remember and honor the importance of becoming intimately familiar with one’s own mind, emotions, and body from the inside, of remembering oneself, of becoming comfortable with oneself, of being present in one’s experience in the here and now. In the present digital age of multitasking, with its tendency to spark FOMO (“fear of missing out”), it is no surprise that many millions turn to meditation for a wholesome alternative.

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Mental Time Travel

Kourken Michaelian^{1,2,3}, Denis Perrin^{1,2}, André Sant’Anna^{1,4,5} and César Schirmer dos Santos^{6,7}

¹Centre for Philosophy of Memory, Université Grenoble Alpes, Grenoble, France

²Institut de Philosophie de Grenoble, Université Grenoble Alpes, Grenoble, France

³Institut Universitaire de France, Paris, France

⁴Department of Philosophy, Washington University in St. Louis, St. Louis, MO, USA

⁵Philosophy-Neuroscience-Psychology Programme, Washington University in St. Louis, St. Louis, MO, USA

⁶MemLab-UFSM, Universidade Federal de Santa Maria, Santa Maria, Brazil

⁷Department of Philosophy, Universidade Federal de Santa Maria, Santa Maria, Brazil

Abstract

Mental time travel research has given rise to an ongoing debate between causal and simulation theories of memory, which has, in turn, triggered a debate between continuist and discontinuist views of the relationship between remembering experienced past events and imagining possible future events. Section “[Introduction](#)” of this entry describes the concept of mental time travel and reviews both debates, distinguishing between processual and attitudinal forms of continuism. Section

“[Processual \(Dis\) Continuism](#)” reviews empirical evidence and metaphysical and epistemological arguments for processual continuism and discontinuism. Section “[Attitudinal \(Dis\) Continuism](#)” reviews the emergence of attitudinal continuism and discusses its relationship to processual continuism and discontinuism and to causalism and simulationism. Section “[Summary](#)” provides a brief summary of the entry.

Keywords

Mental time travel · Episodic memory · Episodic future thought · Imagination · Simulation theory of memory

Introduction

Mental time travel research has given rise to an ongoing debate between causal and simulation theories of memory (see ► “[Constructive Memory](#)”), which has, in turn, triggered a debate between continuist and discontinuist views of the relationship between remembering experienced past events and imagining possible future events (see ► “[Imagination](#)”). This section describes the concept of mental time travel and reviews both debates, distinguishing between processual and attitudinal forms of continuism.

Mental Time Travel

When Tulving (1972) first introduced the notion of *episodic memory* in psychology, he defined it as pertaining to the “what,” the “when,” and the “where” of experienced past events. This “WWW” definition was meant to differentiate episodic memory both from nondeclarative memory (including memory for habits and skills) and, within the category of declarative memory, from semantic memory (memory for facts). The definition was broadly compatible with existing philosophical approaches to memory, including the influential causal theory (Martin and Deutscher 1966), but it was ultimately unable to differentiate episodic memory from semantic memory, since the facts with which the latter is concerned sometimes bear on the what, the when, and the where of experienced past events.

The limitations of the WWW definition, together with accumulating evidence of an intimate relationship between remembering the past and imagining the future, led Tulving (1985) and others in psychology to redefine episodic memory as a form of *mental time travel* (MTT) in which the subject imaginatively re-experiences past events, just as, in episodic future thought, he imaginatively “pre-experiences” future events (see Prospection).¹ This MTT definition suggests that there is no deep difference between remembering experienced past events and imagining possible future events. The definition thus challenged the causal theory of memory, which takes the existence of such a difference for granted, and motivated a new post causal approach: the simulation theory (Michaelian 2016b).

Causalism and Simulationism

According to the *causal theory of memory*, the basic argument for which appeals to intuitions about hypothetical cases, a subject remembers just in case he satisfies previous experience, current representation, and appropriate causation conditions:

A subject *S* now remembers an event *e* if and only if

- S* experienced *e* when it occurred;
- S* now represents *e*;
- S*’s current representation of *e* is appropriately causally connected to *S*’s previous experience of *e*, where an appropriate causal connection is one that is sustained by a memory trace originating in *S*’s experience of *e*.

Like causalists, simulationists accept the current representation condition, but they reject both the previous experience condition and the appropriate causation condition. While there has been some

discussion of the consequences of rejecting the previous experience condition, the debate between causalists and simulationists has so far focused primarily on the appropriate causation condition and, specifically, on its necessity.

Michaelian (2016b) takes MTT research to have demonstrated that episodic remembering and episodic future thinking are processes carried out by the same episodic construction system. Episodic future thinking is a matter of imaginatively projecting oneself into the personal future. It cannot and therefore does not involve an appropriate causal connection between the imagined event and the subject’s current representation of it. Episodic remembering, Michaelian argues, is similarly a matter of imaginatively projecting oneself into the personal past. It can but need not always involve an appropriate causal connection between the remembered event and the subject’s representation of it. Michaelian thus takes MTT research to imply that appropriate causation is not necessary for remembering. What is necessary, according to the *simulation theory of memory*, is merely that the subject’s current representation be produced by a properly functioning (and hence reliable) episodic construction system:

S now remembers *e* if and only if

- S* now represents *e*;
- S*’s current representation of *e* is produced by a properly functioning and hence reliable episodic construction system that aims to produce a representation of an event belonging to *S*’s personal past.

The simulation theory has been the focus of direct attacks by causalists, but the causalism-simulationism debate has also triggered a more general debate regarding the relationship between remembering past events and imagining future events (Perrin and Michaelian 2017; Michaelian et al. 2020; Langland-Hassan 2021). Whereas the causal theory, which claims that appropriate causation is necessary for memory (but not for future thought), suggests that memory and future thought are deeply discontinuous, the simulation theory, because it rejects that claim, suggests that they are fundamentally continuous. Though

¹ In addition to episodic future thought, episodic memory is related to episodic counterfactual thought, in which the subject imaginatively experiences possible events that did not but could have occurred (De Brigard 2014). As counterfactual thought does not appear to raise any issues not raised by future thought, this entry focuses on the relationship between memory and future thought.

linked to the causalism-simulationism debate, the continuism-discontinuism debate has taken on a life of its own.

Continuism and Discontinuism

According to *continuism* (e.g., Michaelian 2016a; Addis 2020), there is, aside from their distinct temporal orientations, no fundamental difference between episodic memory and episodic future thought. *Discontinuism* is the denial of this claim: according to discontinuism (e.g., Debus 2014; Perrin 2016), there is a fundamental difference between episodic memory and episodic future thought. The continuist-discontinuist debate has focused primarily on remembering and imagining understood as processes, but the focus has recently begun to shift to memory and imagination understood as attitudes. Distinct *processual* and *attitudinal* forms of (dis)continuism have thus emerged. According to processual continuism, there is no fundamental difference between the process of remembering the past and the process of imagining the future; processual discontinuism is the denial of this claim. According to attitudinal continuism, there is no fundamental difference between the attitude involved in remembering the past and the attitude involved in imagining the future; attitudinal discontinuism is the denial of this claim.

The relationship of attitudinal (dis)continuism to processual (dis)continuism – and to the causalist and simulationist views with which processual discontinuism and continuism are associated – is discussed in the section “[Attitudinal \(Dis\)Continuism](#),” but note that the distinction between processual and attitudinal (dis)continuism presupposes that memory can be understood either as a process or as an attitude. Understood as a process, remembering might, if causalism is right, be broken down into the stages of encoding, consolidation, storage, and retrieval. If simulationism is right, remembering, strictly speaking, reduces to the retrieval stage responsible for the production of the subject’s current representation. Understood as an attitude, memory can be described in terms of the role played by retrieved content in the subject’s cognitive economy. There is room for disagreement over the

nature of this role, but one might hold that a subject takes the remembering attitude towards a retrieved content when he takes that content to correspond to a past event, or when he takes it to correspond to a past event that he experienced, or perhaps when he takes it to correspond to a past event that he experienced and to be available to him now because he experienced that event.

Processual (Dis)continuism

This section reviews empirical evidence and metaphysical and epistemological arguments for processual continuism and discontinuism.

Empirical Evidence

Continuists have cited a range of empirical findings in support of their view. Discontinuists have both contested the continuist interpretation of these findings and cited additional findings in support of their view.

Perhaps the most impressive evidence for continuism is provided by imaging studies that demonstrate the involvement in episodic memory and episodic future thought of strongly overlapping brain regions, suggesting that a single episodic construction system subserves both forms of MTT (Addis 2018). Additional evidence comes from a variety of other sources. Memory and future thought are organized in a similar fashion, with both past and future events being embedded in the same narrative structures (Rathbone et al. 2011). There are important phenomenological similarities between memory and future thought, as the level of detail and intensity of experience vary with temporal distance in a similar manner remembering and future thinking (Schacter et al. 2012). The capacities to remember past events and to imagine future events emerge in development at roughly the same age (Perner et al. 2010). Moreover, these capacities not only come online together, but they also tend to go offline together. Deficits in the ability to remember the personal past are correlated with deficits in the ability to imagine the personal future (e.g., Rosenbaum et al. 2005). Similarly, patients suffering from depression display parallel tendencies

to remember the past and to imagine the future in overly general ways (Williams et al. 1996).

Though imaging studies provide evidence for continuism, they also provide evidence for discontinuism, as they indicate that imagining is more cognitively demanding than remembering and draws on additional brain regions (Schacter and Addis 2007) and demonstrate that impairment of certain regions affects future thought but not memory (Berryhill et al. 2010). Indeed, some researchers have argued that two subsystems can be distinguished within the system responsible for MTT (Addis et al. 2009), while others have argued that imagining future events, in contrast to remembering past events, relies on conceptual knowledge to provide a scaffolding for the integration of episodic details (Irish et al. 2012). Moreover, there is evidence that remembering past events involves richer and more vivid detail than does imagining future or past events (De Brigard and Giovanello 2012). The emotional valence of remembered and imagined events displays a similar discrepancy, with the latter being characterized by a greater positivity bias than the former (Rasmussen and Berntsen 2013).

Overall, then, the available empirical evidence is insufficient to settle things decisively in favor of continuism or discontinuism. Nor is it clear that empirical evidence could, in principle, by itself suffice to settle things in favor of one or the other view. Continuists grant the existence of differences between memory and future thought, just as discontinuists grant the existence of similarities. The question over which they disagree is whether the differences between these two forms of episodic thought are *fundamental*. Since empirical evidence does not determine whether or not given evidence is fundamental, philosophical arguments may have a role to play in settling the debate. The following two subsections review philosophical arguments for and against two kinds of plausibly fundamental differences – metaphysical and epistemological – between memory and future thought.

Metaphysics

The phenomenon of *reference* in MTT might ground arguments for metaphysical continuities

or discontinuities between memory and future thought. If the causal theory of memory is right, then the reference of memories – the fact that they are about particular events – might be explained, in line with the causal theory of reference, by the appropriate causal connection that links memory to the event that it is about, whereas the reference of future thoughts would have to be explained in other terms, supporting discontinuism. If the simulation theory of memory is right, then the reference of both memories and future thoughts might be explained in the same terms, perhaps in line with the description theory of reference, supporting continuism. There is little published work so far on reference in remembering (but see Michaelian et al. (2020) for an exploratory treatment).

The primary considerations that have been invoked in favor of metaphysical continuities and discontinuities between memory and future thought pertain not to reference but rather to *representation*. There are two main competing views about the role of representation in memory. According to *relationalism*, when one remembers an event, one is directly related to it – the event is a constituent of the memory. According to *representationalism* (which was taken for granted in formulating the causal and simulation theories in section “Introduction”), when one remembers an event, one represents it – the event itself is not a constituent of the memory. The main argument in favor of relationalism pertains to the relational phenomenology of memory (Debus 2008): intuitively, when one remembers an event, it seems to one that one is aware of the event itself, not of a representation of it. The main argument in favor of representationalism pertains to memory error: one can remember not only accurately but also inaccurately (i.e., one can misremember), and one can even remember events that did not occur at all (i.e., one can confabulate); there is no apparent way of describing mismemory and confabulation without invoking (inaccurate) representations, which suggests that successful memory should likewise be described as involving (accurate) representations (Sant’Anna 2020). Relationalists typically respond to the

representationalist argument by biting the bullet and endorsing *disjunctivism*, according to which, because successful memories are constituted by the events that they are about, whereas mis-memories and confabulations are not, there is a fundamental difference between successful memory, on the one hand, and mismemory and confabulation, on the other (see Sant'Anna [Forthcoming](#)).

Relationalism and representationalism can be generalized to MTT as a whole, including future thought. On the one hand, given that future thoughts are about events that have not occurred and that might not occur, they are presumably not constituted by the events that they are about and will therefore be assigned by relationalists to the same disjunct as mismemories and confabulations (Sant'Anna and Michaelian [2019](#)). Relationalism thus entails the existence of an apparently fundamental difference between memory and future thought, aligning with discontinuism. On the other hand, there is no barrier to understanding both memory and future thought as involving representations of the events that they are about. Representationalism is thus compatible with the nonexistence of any fundamental metaphysical difference between memory and future thought, aligning with continuism.

Debus ([2008](#)) argues that relationalism aligns naturally with causalism, maintaining that the constitution relation that relationalists see as obtaining between memory and the event that it is about can be understood in terms of the appropriate causation of the former by the latter. (Note that adopting relationalism would require reformulating the causal theory's current representation condition.) Debus's position is critiqued by Aranyosi ([2020](#)), who argues that a relationalist must, strictly speaking, treat the constitution relation as fundamental. Aranyosi's position is itself critiqued by Moran ([forthcoming](#)), who argues that, while relationalists must treat the constitution relation as cognitively fundamental, they need not treat it as metaphysically fundamental and hence that they may, as is natural, take it to supervene on the appropriate causation relation. If Moran is right, then relationalism aligns not only with discontinuism but also with causalism.

Epistemology

One source of arguments for epistemological continuities and discontinuities is the potential *immunity to error through misidentification* of episodic memory and/or episodic future thought. A thought is immune to error through misidentification (IEM) just in case it is impossible for it to be fully accurate but for the thinker to be mistaken about his own identity with one of the subjects involved in the event. Perrin ([2016](#)) has argued that, because the identities of the subjects involved in a remembered event are causally determined, memory is not IEM, whereas, because the identities of the subjects involved in an imagined event are stipulatively determined, future thought is IEM. Perrin's view thus suggests that there is an apparently fundamental epistemological difference between memory and future thought, aligning with discontinuism. Fernández ([2019](#)), in contrast, has argued that, because the identities of the subjects involved in a remembered event are built into the content of the memory, memory is IEM. Presumably, if the identities of the subjects involved in a remembered event are built into the content of a memory, the identities of the subjects involved in an imagined event may be built into the content of future thought, in which case future thought, too, would be IEM. This extension of Fernández' view is thus compatible with the possibility that there is no fundamental epistemological difference between memory and future thought, aligning with continuism.

Another source of arguments for epistemological continuities and discontinuities is the potential *directness* of our knowledge of the future and the past. It is intuitively plausible that memory provides us with knowledge of past events that is of a different kind than the knowledge of future events with which future thought provides us – that, roughly speaking, our knowledge of the past can be direct, whereas our knowledge of the future can only be inferential (Swinburne [1966](#)). Attempting to explain this epistemic asymmetry, Kneale ([1972](#)) invokes the causal theory of memory, but the causal theory of memory does not entail the existence of the asymmetry unless it is combined with the causal theory of knowledge.

The causal theory of knowledge, however, has difficulty accounting not only for our knowledge of future events but also for a variety of other forms of knowledge (e.g., our knowledge of time-less facts). It thus enjoys little popularity and has been eclipsed by the reliabilist theory of knowledge, on which knowledge does not require causal connection but only reliability. The reliabilist theory of knowledge, combined with a simulationist approach that treats both memory and future thought as potentially reliable, is compatible with the nonexistence of an epistemic asymmetry between our knowledge of past events and our knowledge of future events (Michaelian 2016a).

Attitudinal (Dis)continuism

This section reviews the emergence of attitudinal continuism and discusses its relationship to processual continuism and discontinuism and to causalism and simulationism.

Sections “[Causalism and Simulationism](#)” and “[Continuism and Discontinuism](#)” suggest that the continuist-discontinuist debate ultimately turns on the necessity of appropriate causation for remembering and thus that a resolution of that debate depends on a resolution of the causalist-simulationist debate: if causalists are right in claiming that appropriate causation is necessary for remembering, then discontinuism is correct; if simulationists are right in claiming that appropriate causation is not necessary for remembering, then continuism may well be correct. Section “[Mental Time Travel](#)” suggested that empirical evidence is incapable of directly resolving the continuism-discontinuism debate. Empirical evidence might nevertheless be capable of resolving the causalism-simulationism debate: as noted in section “[Introduction](#),” the basic argument for causalism is based on intuitions, whereas the basic argument for simulationism is based on empirical MTT research. Empirical evidence might thus be capable of indirectly settling the continuism-discontinuism debate, with continuism being likely to prevail over discontinuism.

This line of reasoning may, however, be too simple. Sant’Anna (2021) argues that, if representationalism, which most philosophers of memory

endorse, is assumed, then a resolution of the causalism-simulationism debate would not entail a resolution of the continuism-discontinuism debate, for, if representationalism is true, then the necessity of an appropriate causal connection amounts only to a non-fundamental difference between remembering the past and imagining the future. Rather than turning on the necessity of appropriate causal connection, Sant’Anna suggests, the continuism-discontinuism debate should be understood as turning on the attitudes involved in remembering the past and imagining the future. Recent work has emphasized that, in claiming to remember an event, the subject claims epistemic authority with respect to that event (Craver 2020). It is thus plausible to take remembering to involve a certain attitude, and one might hold, as noted above, that the subject takes that attitude towards a retrieved content when he takes that content to correspond to a past event, or when he takes it to correspond to a past event that he experienced, or perhaps when he takes it to correspond to a past event that he experienced and to be available to him now because he experienced that event.

Though some have argued that it is a mistake to understand the continuism-discontinuism debate in attitudinal terms (Langland-Hassan [forthcoming](#)), the attitudinal approach has been increasingly popular (Munro 2021; Robins 2020; Schirmer dos Santos et al. [Forthcoming](#)). The approach nevertheless faces important challenges. On the one hand, it is not clear that, in claiming to remember an event, the subject necessarily claims epistemic authority with respect to that event. One can, in particular, reject a retrieved memory, which suggests that, when one remembers, one need not take one’s memory to correspond to a past event. On the other hand, it is not clear that the attitudinal approach renders continuism as unattractive as its advocates have supposed. If what it is to take the remembering attitude towards a given content is merely to take that content to correspond to a past event (and not necessarily to take it to correspond to an event that one experienced or to take it to correspond to an event that one experienced and to be available to one now because one experienced it), then remembering may be continuous with forms of future thinking

in which the subject takes his representations to correspond to future events. Attitudinal continuism, then, is a view worth exploring.

Summary

This entry has provided an overview of the causalism-simulationism and continuism-discontinuism debates to which MTT research has led. These debates have not yet been resolved. New varieties of both causalism and simulationism continue to be developed, as do new arguments for continuism and discontinuism. Efforts to clarify the prospects of attitudinal continuism and discontinuism, in particular, are ongoing, and, though considerable attention has been devoted to attitudinal discontinuism, the merits of attitudinal continuism remain largely unexplored.

Cross-References

- [Constructive memory](#)
- [Imagination](#)
- [Prospection](#)

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Mind Wandering

David D. Preiss

Pontificia Universidad Católica de Chile,
Santiago, Chile

Abstract

Mind wandering plays a significant role in the psychological construction of possible worlds. It has a functional connection with pretend play, autobiographical planning, and creativity. Because of its association with pretend play, mind wandering is a precursor of creativity and imagination. Additionally, mind wandering is involved in the preparation for alternative futures during autobiographical planning. Thus, it has a strong connection with autoeic awareness and episodic memory. Mind wandering is also related to idea generation during the incubation stage of the creative process. Moreover, during long-term endeavors, creative individuals adopt a disposition of mindful mind wandering. By advancing research on mind wandering, we will gain more knowledge about the multiple ways human beings transcend their current experience, in addition to open new inquiries about the relationship between consciousness, memory, and creativity.

Keywords

Mind wandering · Pretend play ·
Autobiographical planning · Creativity

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A wandering mind is a mind that is closely connected with possible worlds. Smallwood and Schooler (2006) define mind wandering as “a situation in which executive control shifts away from a primary task to the processing of personal goals” (p. 946). In short, the mind wanders when attention is defocused from the task at hand by self-generated thoughts. Namely, mind wandering is what in our everyday life we sometimes experience as being distracted or diverted by the flow of our consciousness. However, this experience of distraction does not reveal the constructive influence mind wandering has in our mental life. Specifically, the process of mind wandering plays a relevant role in three psychological processes involved with the imagination of possible worlds: pretend play, autobiographical planning, and creativity.

Mind wandering is a dominant activity of our mental life that is present in a multiplicity of psychological conditions. The initial scientific studies of daydreaming proposed that people are in a state of mind wandering during a significant part of their waking life (Singer, 1974, 1975). Recent estimates found that people report that they are in a mind wandering state at roughly one third of the thought samples taken during their waking time (Kane et al., 2007; Killingsworth & Gilbert, 2010). Furthermore, mind wandering is also reported by participants in psychological experiments involving complex or demanding tasks (McVay et al., 2009; Smallwood & Schooler, 2015).

At the beginning of the current century, research provided converging evidence collected using functional magnetic resonance imaging (fMRI) on the nature of mind wandering. Specifically, researchers identified a brain network known as the brain’s default network (Buckner et al., 2008). This network is a baseline default mode of brain function during the awake but resting state that is suspended in goal-directed behavior (Raichle et al., 2001; Raichle & Snyder, 2007). Default activity is associated with mind wandering (Mason et al., 2007). This network has a connection with episodic memory as well. A group of brain regions overlapping the default network displays increased activity when people are remembering the past or imagining the future

(Beatty & Schacter, 2017; Schacter et al., 2007). This connection with episodic memory is very relevant to understand the functional relationship mind wandering has with some constructive psychological processes since some types of future oriented mind wandering have an adaptive value in our psychological life (McMillan et al., 2013).

Although some varieties of mind wandering are beneficial to our development, some others can be detrimental. Mind wandering is particularly disadvantageous for those activities requiring sustained attention, specially in learning contexts (Immordino-Yang et al., 2012; Smallwood et al., 2007; Szpunar et al., 2013). Not surprisingly, mind wandering has a negative impact on traditional educational activities such as attending a lecture (Lindquist & McLean, 2011), answering standardized assessments (Mrazek et al., 2012) and reading (Smallwood et al., 2008). Because of its impact on the learning process, mind wandering may create limitations in our capacity to acquire knowledge that is essential to carry out activities that are not only academically but also personally relevant. These limitations can be attenuated by developing meta-cognitive strategies and ways to re-engage with the main task (Preiss et al., 2019; Smallwood et al., 2007).

As noted by Smallwood and Schooler (2015), mind wandering includes cognitive processes that have been categorized under different concepts such as daydreaming (McMillan et al., 2013), task unrelated thought (Giambra, 1989), stimulus independent thought (Antrobus, 1968) and self-generated thought (Smallwood, 2013), among others. Notwithstanding it involves a wide range of phenomena, self-generated thought is more characteristic of mind wandering than other processes such as task unrelated thought (Smallwood & Schooler, 2015). As regards its measurement, mind wandering can be assessed as a trait or as a state (Seli et al., 2016). Trait mind wandering refers to the self-report of the frequency of mind wandering in everyday life whereas state mind wandering refers to the report of mind wandering in a specific situation, typically one that is produced in a laboratory setting.

Although mind wandering is a universal psychological phenomenon, it comes in many forms

and involves a variety of contents. Understanding the differences between types of mind wandering is informative of its relationship with the possible. Thus, mind wandering can be spontaneous or deliberate (Seli et al., 2015). Individuals that have an inclination to mind wander either deliberately or spontaneously in everyday life have a similar disposition to do so in laboratory settings (Seli et al., 2016). Other differences are caused by the moods associated with mind wandering. Although some types of mind wandering involve positive emotions, some others involve negative ones. Singer (1974, 1975) distinguished three types of mind wandering: one more positive, which involves elaborated imagery and fantasy and an acceptance of inner experience, and two more negative, which are focused either on tortured self-examination or anxious self-doubting. Evidence for negative types of mind wandering is also provided by studies on retrospective mind wandering. Researchers have noted that mind wandering may lead to unhappiness when it is focused on past events (Smallwood & O'Connor, 2011).

To understand the relationship between mind wandering and the imagining of possible worlds, it is necessary to focus on self-generated thoughts that accomplish an adaptive function in our psychological life. The types of mind wandering that help us to imagine possible worlds are those that are mostly future oriented, have a positive emotional valence and/or are connected with constructive idea generation. Specifically, there are three psychological processes that take advantage of the constructive nature of mind wandering: pretend play, autobiographical planning, and creativity.

Mind Wandering and Pretend Play

Mind wandering is present very early in human development since “mind wandering is a natural component of pretend play” (Russ, 2020, p. 231). And pretend play is connected with the generation of fantasies and creative imagination. One of the main features of pretend play is its *as if* concept. Objects and persons are treated *as if* they were other things or in different roles (Fein, 1987; Russ, 2020).

Pretend play has several positive impacts. It is a safe place for expressing affects whose content may be symbolized and articulated creatively (Russ, 2020). Accordingly, pretend play interventions in medical settings can help children cope with stressful health circumstances (Moore & Russ, 2006). In addition to its emotional benefits, pretend play creates situations where children can acquire general knowledge (Sutherland & Friedman, 2013) and develop their communication (Roby & Kidd, 2008). Pretend play also fosters young children emerging self-regulation and language skills (Whitebread & O'Sullivan, 2020). In turn, many of these skills foster the development of creativity. Whitebread and O'Sullivan (2020) suggest that the relationship between pretend play, self-regulation, language and creativity is bidirectional. Other studies have shown that pretend play predicts creativity 4 or even 7 years later (Lee & Russ, 2018; Russ et al., 1999; Wallace & Russ, 2015). Pretend play is related, additionally, with creativity in storytelling, taking into consideration verbal skill (Hoffmann & Russ, 2012). Certainly, the positive impact of pretend play on creativity and human development is based on its imaginative content. It is imagination what makes other possible worlds available to children during pretend play (Woolley et al., 2020).

Mind Wandering and Autobiographical Planning

Episodic memory and mind wandering are interlaced both biologically and psychologically. As mentioned above, brain regions overlapping the default network display increased activity when people reminisces the past or imagine the future (Beatty & Schacter, 2017; Schacter et al., 2007). Beatty and Schacter (2017) notice that this finding shows that episodic memory influences both retrieval processes as well as mental simulations of future experiences or events. Tulving (2002) noted that episodic memory involves a distinctive kind of conscious awareness, which he denominated *autonoetic awareness*. Tulving indicated that this type of awareness covers both the past and the future: in fact, brain damage

impairing episodic memory not only causes amnesia but also an inability to imagine the future. That is, amnesia impacts the entire subjective apprehension of time. This notion of episodic memory is consistent with the following assertion: “Transcendence (i.e., responding to something beyond the here and now) is common to both memory and foresight” (Baumeister & Masicampo, 2010, p. 957).

More specifically, mind wandering is consistent with activities of preparation for alternative futures. Research has shown that a significant part of mind wandering is future-oriented (Baird et al., 2011; Smallwood et al., 2009). As with other phenomena associated with mind wandering, cognitive ability makes a difference: people with a higher working memory are more likely to engage in prospective mind wandering (Baird et al., 2011). Additionally, mind wandering is helpful to future-oriented decision making: people that mind wander more show a decreased tendency toward delay discounting, that is, they have a preference for large rewards which require waiting for them over smaller immediate rewards (Smallwood et al., 2013). Thus, people that more frequently engage in mind wandering may be more aware of the value of long-term recompenses than people who are less mentally engaged with future events. In short, mind wandering is beneficial not only to imagining the future but also to inform our reasoning and decision making about those possible scenarios.

Mind Wandering and Creativity

Creative thinking has a close link with mind wandering as a state. Activity in the brain’s default network correlates positively with general intelligence and creativity (Takeuchi et al., 2011). Additionally, mind wandering seems to be particularly important during the incubation stage of idea generation. As revealed by a meta-analysis performed on 117 previous studies, tasks of divergent thinking benefit more from the incubation stage than linguistic or visual tasks. And a longer stage of incubation with a low cognitive load is more advantageous than a shorter stage of incubation

or one that involves a challenging task (Sio & Ormerod, 2009). Research has also shown that mind wandering occurrence during incubation correlates positively with the participants’ ability to generate solutions to problems whose goal is to test for creativity (Baird et al., 2012). Spontaneous mind wandering can facilitate the development of remote associations by reducing cognitive control. Thus, it makes more probable that problem solvers can find unexpected solutions.

Mind wandering as a trait is also connected with creativity. A study about the relationship between mind wandering, metacognition and creativity that tested 116 university students and 117 vocational students found that their level of mind wandering, assessed as a trait, predicted verbal creativity over the contribution of fluid intelligence, reading difficulties and declarative knowledge of metacognition strategies (Preiss et al., 2016). However, another study with younger high school students showed that mind wandering only boosted the creativity of those students who had a wider attention span and reported more use of metacognitive strategies (Preiss et al., 2019). Therefore, the impact of mind wandering on creativity is not isolated from other variables. Cognitive ability and metacognition are important determinants of how mind wandering impacts on idea generation, especially among younger individuals.

Mind Wandering, Real Life Creativity, and the Self

Most research on mind wandering and creativity has been implemented in laboratory settings instead of real life situations. Although these experimental studies have been instrumental to test several hypotheses about the influence of incubation on idea generation, they may still provide a limited picture of the way mind wandering impacts the creative process of professional or eminent individuals. Consequently, in order to better appreciate the role of mind wandering in creativity, it is necessary to look at its phenomenology in real life, especially during extended processes of innovation, invention or creation.

Many creators report that completing their most important work takes a significant amount of time. Evidence in favor of the protracted nature of creativity comes not only from the 10-year rule in the study of expertise and exceptional achievement (Hass & Weisberg, 2015), but also from numerous case studies of eminent creators, which show that they are involved in long-term networks of enterprise, such as did Darwin when creating his theory of evolution (Gruber & Wallace, 2001). According to Gruber and Wallace, the psychological dynamism of the creative networks of enterprise illuminates how the motivation to finish an incomplete task - the Zeigarnik effect - operates in real life. An eminent creator is always returning to what he or she considers his or her unfinished work. Therefore, to understand the role mind wandering plays in real life creativity, a long-term view of insight might provide a better framework than a short term approach that is restricted to an experimental setting (Cosmelli & Preiss, 2014).

As noted by Cosmelli and Preiss (2014) "there is a wide agreement that finding creative solutions, despite being usually characterized by a sudden and holistic 'Aha!' is not exhausted by this local, more overwhelming aspect of the experience" (p. 2). Based on this open-ended nature of insight in real life, Cosmelli and Preiss (2014) called attention to the "two sided past-closing/future opening structure" (p. 3) of the experience of insight. On the one hand, an insight closes a gap in the past and helps to make sense of previous posed problems. On the other hand, an insight changes the representation of a problem and, therefore, it opens a generative dynamic where new problems are presented.

As suggested, the attentional disposition that creators have in real life is not well-captured using standard behavioral measures that can only assess a circumscribed lapse of time. Therefore, in order to study how mind wandering influences creativity in long-term networks of enterprise, we need to study how creative problem solving and insight have been documented in case studies or personal testimonies (Csikszentmihalyi, 1996; Gardner, 1993). To illustrate, personal accounts of poets suggest authors are specially inclined to deliberately engage on mind wandering during

their creative writing (Preiss et al., 2020; Preiss & Cosmelli, 2017). Additionally, poets have noted that their writing process involves an attitude of mindful mind wandering:

"Professional creators develop a sense of identity that is strongly grounded on their awareness of the mind wandering process. As authors become more expert, they gain a better understanding of the creative process and apprehend its phenomenological nature. Specifically, they become mindful mind wanderers. That is, they make temporally extended insight problem solving a core part of their self and their life story." (Preiss & Cosmelli, 2017, p. 303).

By engaging in mindful mind wandering, poets build their own selves around the creative process. In so doing, they link the process of mind wandering with the larger dynamics involved in the creation of culture.

Conclusion

Mind wandering plays a central role in the psychological construction of possible worlds. It is a core part of pretend play, it is involved in autobiographical planning, and it is an essential part of the generative processes in creativity. It also plays a significant role in long-term networks of enterprise since creators are specially inclined to deliberately engage on mindful mind wandering.

Although we now have an understanding of the relationship between mind wandering and the imagining of possible worlds, there are three areas that require further research. First, more research on the developmental changes experienced by mind wandering across the life span is needed. Specifically, we need to increase our understanding of how constructive mind wandering evolves across development and how this evolution has an impact on other cognitive processes, particularly creativity. Second, we need to explore the role of mind wandering in the creative process beyond tasks tested in restricted laboratory settings. So far, case studies have provided us with a rich conceptual framework that helps us to understand creativity in long-term undertakings. Yet, to this date there are not real life studies focusing on how eminent creators engage deliberately in mind wandering to produce their work

and we mostly rest on biographical accounts to get a grasp of this process. Last but not least, we need to advance research to elucidate what is the relationship between mind wandering and episodic memory since this understanding might inform our comprehension of other psychological processes. To illustrate, creativity research does not usually explore the role of episodic memory in idea generation, although previous experiences may play a key role in real life creativity. Particularly, mind wandering may help creators to capitalize on these experiences in such a way that they get inspiration from them to generate new associations or to produce novel ideas. Thus, mind wandering might be the way muses manifest in an artist or a scientist's life. Yet they may lack any awareness that these muses come from their own experiences.

In summary, mind wandering plays an essential role in our imagining of the possible. Its influence is present very early in human development, it remains significant during the lifespan, and it leaves a distinctive mark in our creative endeavors. By advancing research on mind wandering, we will gain more knowledge about the multiple ways human beings transcend their current experience, in addition to open new inquiries about the relationship between consciousness, memory, and creativity.

Cross-References

- Creativity
- Imagination
- Insight
- Inspiration
- Play
- Poetry

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Mindfulness

Marion Troussellard

Institute of Biomedical Research, French Ministry of Armed Forces, Bretigny sur Orge, France
APEMAC/EPsAM, EA 4360, Ile du Saulcy, Metz, Cedex, France

Abstract

Mindfulness characterizes the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding experience moment by moment (Kabat-Zinn, *Wherever you go, there you are: Mindfulness meditation in every day life*. New York: Hyperion, 1994). Mindfulness, as a disposition or state developed through meditation, appears to be a relevant functioning for adaptation to a naturally stressful environment.

This contribution addresses the question of ecological human enhancement from the point of view of an individual's adaptation to environmental stresses focusing on mindfulness functioning. After distinguishing between the concepts of adaptation and enhancement, this chapter aims to provide a respectful view of health based on ecological principles of human function pursuant to three needs: (i) stress management, (ii) perception of the present environment and understanding the situation, and (iii) decision-making in conflicting situations.

Keywords

Mindfulness · Enactivism · Enhancement · Adaptation · Stress management

Introduction

The broad theoretical frame is enactivism, which targets experiences encountered, incarnated in the center of the relation between man and his environment as the instigator of the adaptation (Varela et al. 1991). This approach suggests a perspective

on an enhancement that respects the man's ecological abilities to adapt that mindfulness makes possible.

Indeed, from time immemorial, men have sought ways to be more powerful, to go faster and farther, to be more energetic and more efficient. Enhancement aims to develop an individual capable of increased performance quality and/or length of use whatever the environmental changes, and the level of stress. When the environment is perceived as too changeable, it becomes uncertain and therefore stressful, what emerges is a risk of a state of maladjustment which, if repeated, can lead to the development of psychopathologies. Stress is therefore both a cause and effect of the adaptation process to serve the individual's survival. Subsequently, any modification of the operation with the aim of human enhancement cannot state an outcome in a stable sense, but more of a dynamic interaction where the result is an enhancement at the time "t" for a specific given environment. Then, it is relevant to act for reducing the perceived stress for a decrease of the biological cost of living in a perceived stressful environment. The minimal cost is observed in a homeostatic operation, and any exposure to an aggressive environment leads to an additional price called allostatic load. The whole purpose of adaptation is to reduce this price. An "enhanced" human would be a person having greater proactive adaptation to his perceived environment.

The arsenal currently used for increasing potential of the individual is vast, notably with the emergence of neuroscience. However, for physicians, limitations for human enhancement are clearly defined by the Hippocrates oath, which as a last resort sets the medical conduct "primum non nocere." This makes it necessary to question the enhancement with a "what to do," in other words, by an essential evaluation of the relevance of the enhancement regarding the adaptation that the environment in which the man is living and acting. Wanting human enhancement can only be done by considering three inseparable risks: increasing a biological capacity without being sure of the absence of risk functional impairment, enhancing human nature, and

improving the way that an individual lives his or her life (meaning the person's fulfillment). Mindfulness, as a disposition or state developed through meditation, appears to be a relevant functioning for adaptation to a naturally stressful environment leading to a high level of fulfillment.

Mindfulness and Stress Response

Understanding Stress Factors and Reactions

A stress factor or a stressor characterizes any situation that activates a stress reaction, regardless of its nature, intensity, and duration. A stressor can be external to the subject, or generated by his or her own body. External stressors are imposed on the subject by a change in the environment. They are the most studied. Internal stressors (affects thoughts, etc.) receive less attention. Internal stressors mainly concern the endless worrying and brooding that takes place between stressful events: negative rumination. Rumination not only delays the recovery from a stress response but also can cause stress responses before the stressor even takes place due to our anticipation of this stressor: we are ruminating about it before it happens (Brosschott 2017). Such negative ruminations induced chronic stress response independent of the environment.

Stress reaction was first conceptualized by Hans Selye (1956) in the general adaptation syndrome in a model with three successive phases. (i) the first phase, known as alarm, corresponds to the activation of all the biological mechanisms according to a control pattern, triggering an explosive acute response of the stressor response. (ii) the second phase, known as the resistance, adjusts the stress response to the intensity of the perceived aggression according to sustained regulation (eustress). (iii) The third phase is a phase of biological exhaustion when the aggression is too intense for too long. It results in the apparition of illnesses, even death. Once the aggression disappears, a recovery phase ensues the stress. This stress response is based on biological reactions that enable an individual to connect to his/her environment. Mechanisms are mainly based on the secretion of glucocorticoids and activation of

the sympathetic nervous system that adjusts the stress response to the needs, and the parasympathetic nervous system supporting the recovery mechanisms. The regulation quality for each of these biological mechanisms is a fundamental point. In the alarm phase, a stress defect leads to an increase in the risk of diseases. In the resistance phase, an excess of stress is harmful to the body due to the excessive biological cost, and therefore of wear that it induces. The first cause of all pathologies is therefore the individual's incapability of stress response management in duration and/or intensity.

The intensity of the stress depends on the perception of the environment by our external sensors, regardless of the reality of the threat. In the psychological field, sensors determine a representation of the world, which is how the brain adjusts to a constant flow of information. During its interaction with the world, the brain adjusts itself using a predictive probabilistic mode of operation. The idea that the world exists serves as a basis to action and the latter is regulated according to the expected results. So, climbing a staircase where all the steps are equal height, except for one, causes falls because of the broken regularity, and therefore a mismatch of action and the environment. This anticipation encompasses all our fields of perception, as routine is the norm. Stress, which is the organism's biological response, occurs as soon as the sensors connecting the individual to the world detect a change.

Finally, the level of stress impacts the manner in which the brain "appreciates" the environment. This effect is directly related to stress hormones in the brain. Cognitive functions are reached on the basis that they rely on cerebral territories that are vulnerable to these biological modifications. The synchronic impact between stress and action has implications on the way in which performances are developed, and the way in which different memories (e.g., implicit or explicit memory, long-term memory, or working memory) are shaped during encounters. Any increase that would touch the manner in which stress is perceived would have a direct impact on these psycho-cognitive functions. Beyond this it is susceptible to having deleterious consequences on

active learning (learning, consolidation, and recovery) and also on the acquisition of strategies for confronting a crisis situation where safety is threatened.

Mindfulness and Stress Factors and Reactions

Mindfulness characterizes the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding experience moment by moment (Kabat-Zinn 1994). Mindfulness disposition (MD) has been conceptualized as a kind of trait (Kilpatrick et al. 2011; Grossman et al. 2004; Lutz et al. 2015), the ability to be mindful in everyday life, regardless of events and stably in time. These are stable interindividual differences in the propensity to pay attention and to project one's consciousness into the present moment (Chiesa and Serretti 2009). Mindfulness practice, which very often is based on mindfulness meditation (MM), relies on training the mind to sustain attention on body experience, primarily breathing, and deliberately returning attention to it whenever distracted (Smith and Novak 2004; Lutz et al. 2015).

The mindfulness functioning that is developed in MD or after a MM program, is mainly represented by its two dimensions of acceptance and presence. Both were proposed as factors that activate individual resources. Acceptance consists of accepting inner events such as emotions, thoughts, or beliefs when one feels them (Hayes and Feldman 2004). Acceptance does not mean resignation but rather perceiving one's own experience through an attitude of acknowledging the experience rather than judging it as either good or bad. Presence is the feeling of being present in the moment; it refers to the degree to which a subject is grounded in awareness itself. Although empirical research has mainly operationalized mindfulness as a unidimensional construct based on the presence facet of mindfulness, the process of shedding further light on the differential roles of presence and acceptance for individuals' attitudinal and behavioral outcomes would contribute to disentangling the processes through which mindfulness impacts individuals' health, well-being, and behavior (Kohls et al. 2009; Liang et al. 2018).

Whatever MD or MM, being mindful would improve the quality of the subject's relationship with her or himself and the world. Indeed, it increases the perception of the environment, the self and the emotions (Bishop et al. 2004). In doing so, it interrupts automatic affective responses, such as ruminations, and allows for a decrease in their intensity and duration (Stein et al. 2008). Being mindful generates a detachment of the subject, allowing a regulation of the affective experience. Recent data suggest that mindful subjects have an increased ability to cope (coping) with affective experiences compared to control subjects (Weinstein et al. 2009). Mindfulness increases behavioral flexibility (Bishop et al. 2004). Mindfulness would thus provide subjects practicing it with an increased number of adapted emotional response strategies (Weinstein et al. 2009). In addition, mindfulness improves scores in situations of attentional conflict, and this with less anxiety (Tang et al. 2007).

Although studies are few, it seems that subjects considered "mindful" have particular physiological characteristics in many respects. These changes can be observed at rest but more frequently when the subject is active and confronts the world. Mindful subjects show better regulation of cortisol levels (Bormann et al. 2009; Matousek et al. 2010). This is reflected in a more rapid decrease in cortisol levels after the morning peak and a slightly higher level of nocturnal cortisol at bedtime than when they get up (Urry et al. 2006). This better regulation is contemporaneous with activation of the prefrontal cortex and amygdala inhibition (Urry et al. 2006), thus corresponding to inhibition of stress pathways (Matousek et al. 2010). For instance, students subjected to mental computational stress show a lower elevation of cortisol if they have practiced meditation exercises (Integrative Body-Mental Training; Tang et al. 2007). Parasympathetic tone is increased in subjects practicing Mindfulness whether during meditation exercises or in the face of stress (Ditto et al. 2006). A similar observation is made for other types of meditation (Tang et al. 2009).

Altogether, data show that mindfulness works. However, the answer to the question "How does

mindfulness work?" remains on the frontier of science. Mechanisms through which mindfulness may work focus on the conscious access of information. Based on neuroimaging, behavioral and self-report evidences, the Hözel's model describes four main cognitive mechanisms through which mindfulness works: (i) the self-regulation of attention, (ii) change in perspective on the self, (iii) body-awareness enhancement, and (iv) emotional regulation improvement (Hözel et al. 2011). Furthermore, a refined model has been proposed based on the event-related potential review (Verdonk et al. 2020). It articulates those four mechanisms with respect to each other suggesting that (i) mindfulness decreases the threshold of conscious access according to attentional mechanisms ("self-regulation of attention" in Hözel's model), and (ii) mindfulness facilitates conscious process of information that comes from inside (body-awareness and self-awareness) or outside (world-awareness). Mindfulness mechanisms of "body-awareness enhancement" and "change in perspective on the self" from the Hözel's model may result from the facilitated conscious process of inside information, and "emotional regulation improvement" from the facilitated conscious process of self-awareness and world-awareness (Verdonk et al. 2020). Altogether, the literature suggests that mindfulness shapes the psyche, the thoughts, and the body.

Mindfulness and Enactive Response to Environmental Changes

Each confrontation, with its successes and failures, will modify the way an organism operates (e.g., memory) and will weigh on the manner in which the subsequent confrontation will be handled. Integrated over time this dynamic evolution of interaction between the individual and the world eventually defines the health condition that then becomes the ultimate criteria of the effectiveness of the individual's adjustment. It is therefore obvious that any modification of this interactive modification by an enhancement has no impact on just the particular moment but potentially on the possibility of the individual's

evolution. Based on this enactive interaction, we would suggest that being mindful implies singular adaptation for both the perception of the present environment and the understanding of the situation, and decision making in conflicting situations.

The Perception Process and Its Biases

The information processing system is perceived in the form of a chain of transformations that operate in stages and use the subject's knowledge. The processes involved use the perception of information from the environment to adjust the necessary response, notably in a tactical situation. The perceptive process uses a double intake of information; cognitive and emotional. This dual perception is a key element of adaptation to a situation that contributes to understanding the situation and the resulting decisions made.

On one hand, the cognitive perception of information from the environment aims at creating a mental map from which a situational awareness emerges to support the action. This mental map will be all the more difficult to build for a subject if the information that is available to him/her is sketchy, abstract, and/or fragmented. The emergence of mind maps underpins the perception of the environment. This involves many processes including: (i) perception of purely cognitive information (the "what" and the "where"), (ii) updates of the mental map at each moment (here and now), (iii) categorizing information and regrouping what is similar by perceptual habits or by what is new, (iv) the level of awareness of information that depends on another attentional focus and potential conflict on another piece of information already perceived; (v) information detection threshold that depends not only on mental charge and a degree of attention, but also on detection training and the emotional state of that moment (an emotion during a sub-threshold infraliminary stimulus modifies behavior without the subject realizing). It is all of these mechanisms that participate in perceiving the environment. It cannot be envisaged to think of the increase of one of the perceptual mechanisms in isolation from the dynamics that connect them all together. The enhancement is thus *de facto* of information

classification in relation to the subjects' information processing habits.

On the other hand, all perception is evaluated and generates an emotional response. Perceiving a situation is partly recognizing a subunit that we identify in a complex environment. The perceiving subject starts by separating from the known, habitual, and the new. The known comes with a greedy emotional safety and a new feeling of unease that can render the perception slightly aversive. Given the perception of something new, we must consider that a continuum exists that swings from the propensity to explore to the propensity to not explore. Depending on the subject's position, the perception of the information deemed relevant and the resulting treatment will be different. On the other hand, perceiving a situation also means perceiving the emotional dynamics that accompany the situation. This emotional tone is calculated by the subject according to his/her propensity to perceive emotions within his/her environment. It depends in particular on the quality of the social cognition of the subject which implies the dimensions of empathy and theory of mind. It also depends on how the situation is presented to the subject, especially visually; the emotional tone of a visual scene captures the attention even if it is in the periphery of the field of vision or if it is degraded. The emotional distinction of the visual environment aims to alert the individual to an event within his/her potentially beneficent or threatening environment, and divert his/her gaze in the direction of this stimulation to optimally respond to it. This matter raises the point that the negative emotions and stress that are associated are a major factor of determination of what the subject perceives where he/she is given to perceive it.

The cognitive and emotional perception of information is then disturbed by perceptual bias. For example, an emotional state of fear results in early brain activations that occur before the conscious emergence of emotional feeling, and at the perceptual level through a bias of perception of threatening information, to the detriment of any other information present in the environment. Moreover, activating the system wake-up is treated as being strongly involved in perception

quality. It would allow simultaneous attentional orientation toward the threatening stimulus for its preferential selection, and priority access to a deeper, more controlled, and conscious cognitive treatment of the environmental elements. Furthermore, data of affective neuroscience in the visual perception of emotional images show that mood changes the manner in which an individual perceives the world (Wyczesany et al. 2018). Therefore, an anxious mood makes it difficult to disengage emotional visual information (Singer et al. 2012), while a sad mood advocates perceptual avoidance of sad situations (Durbin et al. 2020).

Perception is therefore a function that is not objectively driven, but is rather subjectively and unconsciously driven by emotions. Beyond the complexity of the information, perception mostly relies on emotional bias. Stress, via associated emotional responses, modulates awareness and information awareness. Updating the mental map continuously depends on the quality of this stress regulation.

Mindfulness and Perception of the Present Environment

Being mindful is characterized by the quality of the relationship between the self and the world, and has mechanisms for regulating emotional biases. Attentional capabilities enable the individual to be receptive to any experiences available to him or her. A nonjudgmental attitude enables the detection of biases and reduction of automatic affective responses. This would promote the emergence of an objective point of view on the current situation, in other words enabling detection of a pertinent signal in all the noise of cognitive and emotional stimuli.

A recent study suggests that MM and MD have not the same impact on the quality of visual perception (Kumari et al. 2017). Whereas MM seems to improve the control we have over our eyes, MD was not associated with such control. For example, subjects after a MM were associated with fewer sudden jerky eye movements (saccades) during the tracking of a target, suggesting the eyes were locked onto each target more effectively compared to subjects high in MD. Authors

suggest that it is probably because of the well-illustrated beneficial MM effects on attentional systems (Kumari et al. 2017). Such benefits were not observed in naive MD.

In line, MM is associated with neurophysiological changes indicative of greater cognitive and physiological flexibility (Deepeshwar et al. 2015; Malinowski 2013). It has been showed that such a cognitive training increases flexibility in visual processing because it would reduce the automatic and habitual use of categories in favor of a resampling based on new information (Hodgins and Adair 2010; Moore and Malinowski 2009). On one hand, such an improvement could reduce the detrimental cognitive processing responsible for social discrimination (Lueke and Gibson 2014). On the other hand, it could be helpful for good prediction when the environment is complex and generates uncertainty, for example high-risk situations or missions for high-risk occupation. High-risk occupations present unique challenges due to increased levels of danger and exposure of workers to different types of stress. These include military, police, and firefighters.

Mindfulness and Understanding the Situation for Decision Making

Understanding a situation involves (i) perpetual awareness of the environmental elements in a time and space volume; (ii) understanding their significations, and (iii) anticipation of their future evolution. This description is part of a computational neurosciences' approach that states that a human being is comparable to a probabilistic or "Bayesian" machine. The idea is that our brain would constantly manipulate hypothesis and make calculations that involve a certain degree of confidence to take decisions. To predict the environment and act in relation to these predictions, it seems that the brain takes into account; (i) the uncertainty associated with the signals it receives to integrate them in an (almost) optimal way, and (ii) certain knowledge that is continuously updated. The quality of understanding the situation uses the quality of the prediction as a natural lever for its improvement, and the

regulation mechanisms of cognitive and emotional biases as the relevant targets.

Decision making is basically answering the two following questions: “What are we going to do?” (What?), and “How are we going to do it?” (How?). Making a decision involves choosing between several possibilities in an uncertain universe, within a time frame deemed desirable and possible and making the best use of the available information and resources. Individually and as a group, a decision is an act that engages the person and organization. Decision making can result in a simple or complex action, opinion choice, or action inhibition. It has an adaptive goal, despite the fact that the subject always takes into account the situation. In particular, the evaluation of the outcome of the decision depends on the environment in which it takes place, and on the knowledge/control of the consequences of the chosen action and the one who evaluates it. Furthermore, the way in which people approach the world, and interact with it, represents a true subclinical trait whose impact on decision making is a preferential orientation toward safe or high-risk choices. While the majority of people favor the safe aspect with some incursions toward high risk, few people systematically favor safety or high risk, the level of anxiety tipping the balance toward reduced or increased risk-taking. From a neurobiological point of view, it can be explained by the functional quality of the ventromedial prefrontal cortex involved in self-perception (Damasio 1994).

The interest in the track of mindfulness functioning to optimize decision making is based on data from the literature highlighting its benefit in the different stages of the decision making process: (i) The mindful subject would better detect discordant situations; his or her ability to detect weak signals from the environment is improved and it has been proposed that emotions, and the physiological modifications that result from them, especially in response to situations of moral conflict are better detected (Schofield et al. 2015), (ii) Since the mindful subject is described as having an increased capacity for openness and creativity, he or she is more likely to find appropriate solutions, even outside the box (Ruedy and Schweitzer 2010), (iii) The mindful subject

would be less intolerant of the uncertainty generated by an uncertain situation (Ruedy and Schweitzer 2010), (iv) Finally, he or she is considered to be less prone to risk-taking (Upton 2017).

Conclusions

Stress is inseparable from operational life, but its consequences on high-level cognition can be disastrous. Mindfulness makes possible adaptive responses for a better adaptation in relation with the challenges from life. The puzzle of arguments from literature suggests that the improvement associated with mindfulness functioning constitutes an ecological enhancement, which could be useful for everybody. Furthermore, it could be relevant for high-risk professionals, which have to deal with many challenges from the volatility, uncertainty, complexity, and ambiguity (VUCA) of their professional environment. Finally, it could help to cope with the context of the Covid-pandemic, which is a VUCA environment of life.

Cross-References

► Spirituality

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Mobility

Vlad P. Glăveanu

School of Psychology, Dublin City University,
Dublin, Ireland

Centre for the Science of Learning and
Technology (SLATE), University of Bergen,
Bergen, Norway

Abstract

This entry focuses on the relationship between mobility and possibility and postulates that movement – physical and psychological – underpins the possible and its exploration in individuals and in society. This basic argument is supported by a brief examination of objects and inventions on the move throughout prehistory, the circulation of ideas in past and present societies, the mobility of people within and between national boundaries, and the movements of the mind, expressed as episodes of daydreaming and imagination. In each case, potential and actualized forms of mobility

support the expression of possibility-expanding phenomena such as creativity and innovation. But this relation is neither linear nor easy to unpack. Less mobile lives can be lived very creatively, just as constant travelling can be disempowering and reduce one's agency. Final reflections are offered on the interplay between (im)possibility and (im)mobility and the way it shapes human existence.

Keywords

Movement · New mobilities · Creativity ·
Imagination · Innovation · Migration ·
Diffusion

Introduction

Everything in the universe is mobile. We have known this from at least the time of Heraclitus of Ephesus, 500 years before the common era, who famously claimed that “everything flows” (*Panta rhei*). Movement defines the existence of galaxies, as well as that of the smallest subatomic particles. Life itself is intrinsically mobile. By moving around, infants learn about the world and adults can play multiple roles in ever-changing, dynamic societies. Of course, the meaning of movement here varies. Galaxies, infants, and societies move with different rhythms, at different scales, and for different “reasons.” But, essentially, they all change position, in space and time, in ways that describe trajectories and make up evolving networks. By acknowledging and studying mobility, we can thus understand something essential about ourselves and the world we live in. And yet, our view of the world (and the way we talk about it) is often trapped by stable, static, or unchanging units and entities; in mobilities research, on the contrary, we get to see all these entities as they emerge, transform, and dissolve in and through movement.

This entry focuses on human forms of mobility, both individual and societal. Two of the characteristics of this kind of mobility are purposefulness and meaningfulness. In other words, human beings develop intentions to move (or stay) and construct all sorts of conceptions, images, and

visions of what this movement will be like and how it will end. They ascribe meaning to their mobility, acts that can be then related to as good or bad, exciting or scary, useful or pointless. And, with this, immobility also gains signification. It can be frustrating to have your movements reduced, and this is why many societies, across time, used imprisonment as punishment. And there are few things more unsettling and traumatic for human beings than going through forced displacement or migration. But it can also be comforting to stand still for a while, to be grounded somewhere, and to feel at home.

If we see the world, social and psychological, through the lens of movement and mobility, we get to understand better the development of the self, the way our cognition functions, the role of imagination and emotion, and the directions taken by history and social change. But we also get to recognize something more essential about our human existence, ultimately defined by its openness to the future and to other ways of being. And that is the basic fact that *mobility begets possibility*. It is by moving – physically and/or imaginatively – that we experience more of our world and we develop a sense for what is possible as well as explore the wide range of possibilities and impossibilities that distinguishes us from other species.

And yet, this relation between mobility and possibility is not linear or deterministic. It doesn't mean that more mobility will lead to more possibility, manifested, for example, in increased levels of creativity and innovation. Sometimes, constant movement can be distracting or overwhelming. Immanuel Kant is famed, for instance, for never having left his hometown of Königsberg, and still he opened up possibilities for thinking that survive the ages. Stephen Hawking spent most of his life paralyzed, and yet this didn't prevent him from making exceptional contributions to our knowledge of the cosmos. Conversely, many people feel the need for some quiet time alone in order to create. J. K. Rowling sat writing many of her novels in the same café, overlooking the Edinburgh castle. Does this make, though, Kant, Hawking, and Rowling immobile? Certainly not. But it does call to our attention the fact that there is more to movement than physical journeys and

migration. Just like there is more to possibility than writing novels, creating theories, or philosophizing about humanity. Conceptual clarity is called for in both mobilities and possibility studies.

In this entry, I will support and nuance the claim that possibility is born out of and depends on mobility by considering, in turn, the movement of objects, ideas, people, and minds (for a more detailed discussion, see Glăveanu 2020). These forms of mobility are intrinsically connected to one another. Objects don't emerge out of nowhere, ideas depend on minds, and the bodies of people should not be separated from either in a Cartesian way. By analytically making these distinctions, I am hoping here to relate the discussion of mobility and possibility with that of temporality. Each one of these movements captures a different timescale, from phylogenetic and sociogenetic to ontogenetic and finally microgenetic. In the end, it is important to reflect on the notions of immobility and impossibility. Is the impossible defined by an absolute lack of movement? And is the latter even possible?

New Mobilities

New mobilities is a paradigm that emerged in the early 2000s in sociology and related disciplines such as geography, archaeology, and anthropology, as a response to static and entity-based theories of society and culture (although some would disagree with referring to mobilities as a 'paradigm'; see Randell 2018). John Urry, one of its main proponents, aimed to recreate sociology as a discipline that "examines the diverse mobilities of peoples, objects, images, information and wastes; and of the complex interdependencies between, and social consequences of, these diverse mobilities" (Urry 2000, p. 1). He challenged views of society as self-contained, bounded, and unitary and, instead, proposed that it should be conceived in terms of flows, networks, and "scapes." This dynamic vocabulary goes a long way in transforming our conception not only of society but also of culture, globalization, the environment, and the self. After all, living in the hyper-

connected and mobile world of the twenty-first century invites us to reconsider our models as well as everyday practices.

The meaning of mobility in new mobilities – called “new” in recognition of the fact that mobilities have been studied for decades by various disciplines – is expanded to incorporate dimensions that cut across the psychological, physical, social, economic, and political:

1. “the corporeal travel of people for work, leisure, family life, pleasure, migration and escape, organised in terms of contrasting time-space patterns ranging from daily commuting to once-in-a-lifetime exile;
2. the physical movement of objects include food and water to producers, consumers and retailers; as well as the sending and receiving of presents and souvenirs;
3. the imaginative travel effected through the images of places and peoples appearing on and moving across multiple print and visual media and which then construct and reconstruct visions of place, travel and consumption;
4. virtual travel often in real time transcending geographical and social distance and forming and reforming multiple communities at-a-distance;
5. communicative travel through person-to-person messages via personal messages, postcards, texts, letters, telegraph, telephone, fax and mobile” (Urry 2007, p. 47).

This wide scope is welcomed as it both highlights the relevance of mobilities studies nowadays and the necessarily interdisciplinary nature of this endeavor. And yet, beyond cataloguing types of movement and studying them in detail, it is also important to develop a deeper reflection on what mobility *does* to our existence and the many ways, positive and negative, in which we are transformed by it. New mobilities scholars are right when it comes to not romanticizing movement and exploring, for example, the “darker” sides of mobility as well, including in terms of oppression, environmental destruction, or increased inequalities (see Ohnmacht et al. 2009; Macková and Kysučan 2016). But how exactly does mobility operate? What are the differences and similarities between the movements of bodies and information, for instance? What about the difference between human and non-human mobilities, more broadly?

There are many conceptual questions still to be raised within new mobilities. Fortunately, the methodological developments inspired by this emerging paradigm have been substantial and allow us to capture previously invisible or understudied phenomena. The specific methods used by researcher include, but are not reduced to:

- “the ‘observation’ of people’s movement, of bodies strolling, driving, leaning, running, climbing, lying on the ground, or (...) visiting a petrol station. This involves observing directly or in digitally enhanced forms mobile bodies undergoing various performances of travel, work, and play. (...)”
- Second, there are several emerging forms of ‘mobile ethnography’, which involve participation in patterns of movement while conducting ethnographic research. (...)
- Third, there is the keeping of ‘time – space diaries’, in which respondents record what they were doing and where, and how they moved during those periods. (...)
- Fourth, there are varied methods of ‘cyber-research’ that explore the imaginative and virtual mobilities of people via their websites, multi-user discussion groups or listserves, as well as through the use of computer simulations. (...)
- Fifth, there is imaginative travel normally involving experiencing or anticipating in one’s imagination the ‘atmosphere of place’. (...)
- Sixth, much travel and communication involve the active development and performances of ‘memory’. This necessitates research methods that simulate the active employment of photographs, letters, images, souvenirs, and objects. (...)
- Seventh, much mobilities research will need to examine multiple ‘transfer points’ (...), ‘places of in-between-ness’ involved in being mobile but immobilised in lounges, waiting rooms, cafés, amusement arcades, parks, hotels, airports, stations, motels, harbours.” (Sheller and Urry 2006, pp. 217–219)

The new fieldworks mentioned above should all be of interest to scholars working on possibility studies from across different disciplines. They each reveal something interesting, above all, about the interplay between the possible and the impossible within mobile societies and mobile lives. What remains to be theorized and studied further is precisely this articulation between (im)-possibility and (im)mobility in the case of objects, ideas, people, and minds.

Objects on the Move

One of the most directly observable mobilities is that of objects. As people and ideas move around, they usually leave material traces in the forms of things and institutions. These embody the views, knowledge, and norms of different communities, and, as such, their presence in faraway places is taken as a marker of cultural contact. And one of cultural transformation, given that the objects that “travel” most and furthest are innovations.

In fact, the prehistory of humanity is defined by vast migrations and the circulation of early technological inventions. These prehistoric tools expanded the sphere of the possible for entire groups that, through travel and exchanges, got to spread these innovations and to improve and transmit them forward. The likelihood of these processes taking place depended on demographic factors. If useful inventions were rare, then small and isolated societies had small chances of developing them and, even if they were created, the risk of losing them, because of random events or incomplete transmission, was great (Richerson et al. 2009). As people migrated and communities became larger, technological invention and its transmission increased, what Richerson and colleagues called a “population-technology-population positive feedback”:

“We can assume that the first hominins, like our closest relatives, the chimpanzees and bonobos, lived in social groups knit by intense interactions among group members. At some point, their social lives began to expand far beyond the local group. Hominins first began to systematically exploit large animals as food sources, whether by hunting or scavenging, around 2.5 mya (reviewed by Plummer 2004; but see McPherron et al. 2010 for possible evidence of even earlier forays into carnivory). (...) Anatomical evidence from later *Homo ergaster/erectus* (after 1.8 my) suggests an adaptation to a high level of mobility, particularly long-distance running (Bramble and Lieberman 2004). Both of these behavioural trends are linked with well-recognised technological developments. The first widespread evidence of carnivory around 2.5 my is of course associated with the earliest stone tools (Plummer 2004; de la Torre 2011). (...) There may be basic functional explanations for both the first development of stone tools and the subsequent shift to bifacial shaping of artefacts. However, the dispersal of these new behaviours across large parts of

the African continent, and eventually into Eurasia, required at least some exchange of information among local populations.” (Kuhn 2012, pp. 76–77)

The same deep connections between mobility and innovation, as illustrated by the movement and transformation of objects, have been documented for later prehistory (e.g., Knappett and Kiriati 2016) up to the early modern period (e.g., Schilling 1983). In the latter, for instance, the forced migration of Calvinist communities from the southern Netherlands in the sixteenth century had a great impact on the economic modernization of host societies in Western Europe and, in the long term, the emergence of modern capitalism. The objects travelling in these cases are much more complex and include an important symbolic dimension that brings them close to the circulation of ideas. But it is always the case that, throughout history, objects and ideas are connected by processes of creativity and reflect the cultural conditions and life experiences of their makers. Without a physical or material expression, however, the “durability” of ideas, knowledge, and values would be considerably reduced and, without acts of mobility and position exchange, the creation and transformation of objects, in the first place, would become all but impossible.

Ideas on the Move

As people and things travel, so do their conceptions and views of the world. All innovations, especially successful ones, operate at two different levels: on the one hand, there is the level of practical action where innovations become tools to operate with; on the other hand, they explicitly or implicitly bring new ideas that either consolidate or change the direction a society is moving in. And this is precisely why ideas on the move are so powerful – they are the root of changing mentalities, social practices, and social movements. Then, how exactly do ideas “move”? The migration of people is again essential, but so are general processes of communication between them. Today, the latter are greatly facilitated by the use of technology and social media platforms. In

theory, more becomes possible for people who are exposed to the views of others. In practice though, the phenomenon of information bubbles and the circulation of misinformation radically reduce possibilities for change.

The circulation of ideas is explained in science primarily with the help of diffusionist theories and models. These assume that cultures are dynamic and that innovations that travel don't just add themselves to a local culture but shape it. Diffusion patterns include, among others, "a partial penetration of two cultures, the overlapping of a 'weaker' culture by a 'stronger' one, the parallel mixing of almost all cultural aspects, or only sporadic adoptions" (Heitz and Stapfer 2017, p. 15). The focus on the diffusion of ideas started in disciplines like geography and anthropology from the late eighteenth century onwards. And it led to a transformation of how we understand culture, society, and contemporary phenomena:

"'Migration of ideas' opens up a vast field of study—how Indian and Arabic knowledge reached Medieval Europe; how Christianity, hand-in-hand with colonization, spread across the globe; how Marxism spread and adapted to different conditions; how technical innovations and scientific discoveries spread and get taken up in different contexts; how conquerors force their views and practices on the conquered; more recently how global capitalism and 'McDonaldisim' has resulted in a depressing homogeneity around the world and so on." (Porter and Poerwandari 2008, p. 64)

It would seem, from the above, that diffusionist models ultimately explain the spread of impossibility, for instance, the impossibility of imagining a different way of living in society. Dominant ideas and practices circulate, taking over local cultures and spreading uniformity rather than diversity. And, given that possibility resides in difference (Glăveanu *in press*), ideas on the move can easily close down rather than open up new spaces for human thinking and action. And yet, it is important to note here that ideas never "travel" unchanged. The process of transmission and diffusion is equally one of *transformation*.

This is acknowledged to various degrees by different theorists of diffusion. Gabriel Tarde (1962) built a new sociology on the premise that society is made up of invention and imitation, and,

while he recognized that imitation often means adapting ideas, he nevertheless outlined different laws for these two phenomena. Everett Rogers (2003) famously offered a generalized model of diffusion including the S-shaped curve of adoption of innovation over time; however, his focus was again never on reinvention through transmission, but on how innovations are adopted as such and passed on. Psychological accounts drawing on parallels with biology, such as Dawkins's (1976) meme theory and especially Sperber's (1996) epidemiology of representations, left more room for the role of interaction and communication between people. But it is early sociocultural accounts of transmission, like the one formulated by Frederic Bartlett (1923), that fully recognized the constructive nature of ideas on the move. This became the premise of more theories, such as social representation theory (see Moscovici 2001), and a new literature on mobility and intergroup contact as sources of creativity, innovation, and possibility in society.

People on the Move

Historically, the mobility of objects and ideas was based on the movement of people. Nowadays, however, makers and buyers of a product will rarely meet, even if the relation is still enabled by human intermediaries. The circulation of ideas online makes it possible for individuals to connect with each other from the comfort of their own homes. Exchanging with someone at the other end of the world can be done in an instant and take little physical movement except for typing messages on a keyboard. And, with these exchanges, there is an assumption that users could become more open, flexible, and even creative. This hope that people's mobility leads to more creativity, innovation, and, ultimately, prosperity underlines the European Union's four freedoms of movement – of goods, capital, services, and labor. The last one, the movement of people, however, consistently comes under criticism from right-wing, populist governments ready to blame national problems on "outsiders" and demonstrably fuelled the UK's exit from the Union.

And yet, the movement of people shouldn't be reduced to the act of crossing national boundaries. Not only is migration taking place primarily within countries, but our daily life is marked by the longer and smaller journeys we take and even by micro-mobilities within the house. At the moment of writing, almost half of the world's population has been under different forms of lockdown, and exit strategies are gradually set in place; still, constraints on personal mobility abound. But this doesn't mean that everyone is immobile, standing still or has been so for months. The notion of personal mobility should thus be extended to incorporate immigration, online activities, and everything in between:

"Personal mobilities constitute self-propelled movements, which include, first, the natural corporeal (physical) non-technological self-moving, more simply known as walking, and obviously those physical mobilities extended by technologies (driving automobiles and bicycling and motorcycling). Personal mobilities further include virtual mobilities through fixed and mobile telephones and the Internet. Self-propelled mobilities exclude, by their very nature, the use of public transportation and communications, in which movements are mediated, though comparisons between automobiles, on the one hand, and buses and trains, on the other, as well as between telephones versus telegraph and postal services, have been made, and some will be made later on." (Kellerman 2006, p. 2)

The important question for this entry is *how* personal mobilities contribute to personal possibilities. It is undeniable that living mobile lives contributes to our imagination and creativity by (a) helping individuals acquire multiple experiences of and perspectives on the world; (b) increasing the chances of meeting others and exchanging ideas and objects; and (c) expanding our agency and sense of what is possible in our lives. In making these observations, however, we need to recognize the fact that there is no linear relationship between mobility and possibility. More travel and more experiences don't necessarily translate into more creativity, especially if they come out of forced displacement or subject the person to traumatic events. Interestingly, it is the capacity to imagine that is directly affected by

trauma, and yet, healing resides precisely in exercising this capacity and being able to envision a new and different future (Womersley 2020). In these cases, the experience of migration can become one of impossibility. On the other hand, sedentary people can be highly creative, whenever they diversify their experience and interactions with others from the more stable positions they occupy in the world.

There is a growing literature today on the relationship between migration and the imagination (Salazar 2011), as well as empowerment (Trifanescu 2015). The risk here is developing a romanticized perspective on movement. There are many variables, personal, social, economic, political, and historical, that mediate the connection between migration and possibility and determine its concrete outcomes. But there is little doubt that lives lived in forced immobility and the absence of social contact are closed to the possible in the sense of lacking opportunities to envision alternatives (by considering the views of others) and choose between them (by guiding one's own course of motion and action). To understand why, we need to turn our attention towards a final key dimension: the psychological one.

Minds on the Move

All human mobilities, individual and collective, have a psychological component to them. They are triggered by needs and visions of the journey and its end point, accompanied by emotions and the motivation to continue (or to stop), and depend on the psychological adaptation to (and transformation of) one's new life at the destination. Minds and bodies travel together as an inseparable unit given that all our mental processes are embodied (including imagination and affect) and our entire psychology depends on movement. It is not without reason that cognitive development, for example, starts from the sensorimotor stage (Piaget 1950), or the emergence of a human self depends on our capacity to "move" to the position of the other, at first physically and then mentally (Mead 1934).

There are, thus, complex relations between psychological explorations of the possible and mobility that don't depend on migration or even bodily movement. The mind itself "travels," through daydreaming and the imagination, to other temporalities (e.g., the imagined past, the projected future), geographies (e.g., faraway places, including ones impossible to visit), and spheres of experience (e.g., moving between home, school, and work). Zittoun and Gillespie (2015) formulated a theory of imagination premised on psychological forms of mobility that they describe as the "loop model." According to them, imagination loops in and out of immediate or proximal experiences of the here and now and into distal experiences. This conception builds on a sociocultural psychology grounded in movement, for which the possibility of being in different positions and diversifying experiences is essential (see Gillespie and Zittoun 2013). While recognizing the importance of repositioning, trajectories, and transitions for human existence, the authors posit too sharp a differentiation between minds and bodies and proximal and distal experiences and thus create the risk of harmful dichotomies (e.g., in our case, that between physical or embodied movement, on the one hand, and psychological or imaginative loops on the other).

The reality of psychological mobilities is that they are mental and physical *at once* and that possibility-expanding phenomena such as imagination and creativity don't "take us out" of the here and now but, rather, bring the "then and there" into it, transforming the experience of the person (see Glăveanu et al. 2017). In the end, our engagement with the possible depends *both* on mind and body and, beyond them, on a physical and cultural environment populated by objects and by other people. My own work has been dedicated primarily to understanding the role of others – and differences with them – for creative action and possibility (for more details, see Glăveanu *in press*). From this standpoint, psychological mobilities are rooted in physical ones, and explorations of what is possible and impossible depend on the two. There is no human movement

that doesn't trigger and result in emotions, needs, thoughts, and anticipations of the future. And the processes that help us engage with this future equally invite and depend on mobility.

Concluding Thoughts

In this entry, I made the claim that possibility originates in mobility (see Glăveanu 2020) and that, in order to grasp this, we need a complex understanding of both phenomena. Mobility, for example, isn't reduced to the migration of people but captures, more broadly, the movement of things, ideas, and human experiences through offline and virtual environments. At the same time, possibility shouldn't be reduced to revolutionary creations and historical inventions. All mundane acts of anticipation, imagination, creativity, wonder, awe, and serendipity (and many others, as illustrated in this encyclopedia) contribute to making us aware of what is possible and help us explore potentialities and actualize at least some of them, allowing new cycles of mobility and possibility to take place.

Towards the end, I want to reflect for a moment on what looks like the reverse of these notions: the *impossible* and the *immobile*. To start with *impossibility*, it is physically impossible for an entity in our universe to be perfectly still, just like it is for a living system to not express any kind of movement. For human beings, for as restrictive as their material conditions might be, for example, in prison or in situations of being physically immobilized, there is always the possibility of psychologically reaching out to new spheres of experience. Of course, these are extreme examples and, most often, we live lives somewhere on the continuum between (im)mobility and (im)possibility. But if the basic premise outlined here is correct, then ontologically we need mobility in order to exist as beings within the realm of the possible (Glăveanu 2018), open to difference, to otherness, and to unknown futures. Absolute impossibility comes from no movement or even no the prospect of it – when people feel stuck, trapped, and unable to "move on." A perceived

lack of agency leads, in these cases, to either hopelessness or anger. In societies that appear paralyzed by inequality, plagued by misinformation, and fired up by populism, it is these kinds of experiences that scholars of new mobilities and possibility studies would do well to focus on and understand better.

Cross-References

- [Automobility Studies](#)
- [Collaborative Creativity](#)
- [Creativity](#)
- [Ignorance](#)
- [Imagination](#)
- [Innovation](#)

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Multimaybe Matrix

- [The Matrix of Maybe](#)

Myths

Sandra Obradović

School of Psychology and Counselling, The Open University, Milton Keynes, UK

Abstract

The current entry discusses the concept of “myths” and the role it plays in both traditional and contemporary societies. When we think of common sense understandings of myths, we often think of false beliefs or stories that are told that do not necessarily reflect real events, but can become powerful mediators within social, cultural, and political life that can give meaning to the identities, practices, and morals of communities. Their power lies in their continued relevance across generations and societal transformations. Myths are meaningful not through the stories that they reproduce, but through what is achieved in the telling of those stories.

Keywords

Communities · Identity · Morality · Myth · Narrative · Social belonging

Introduction

What is a myth and why should we care about myth as social scientists? This entry aims to answer this question by discussing existing work on myths and mythology, particularly focusing on the functional role they play for binding communities into essential entities, and providing meaningful frameworks for understanding “our” values, norms, and morals through the telling and retelling of certain stories.

The entry is structured in the following way: First, I will outline some common conceptualizations of “myth” within the social sciences, aimed at providing an understanding of what myths are. Second, I will discuss the role myths play for social, cultural, and political communities. This will be followed by a consideration of how

research on myths can be done, drawing on examples from different disciplines. Last, I briefly touch on the possibilities opened up through the narration and continued existence of collective myths before concluding with some remarks on why myths remain alive and powerful in contemporary societies.

What Is a Myth?

The concept of “myth” tends to evoke thoughts of mystical events that extend beyond our immediate and imagined reality, which narrate the origins of different peoples and communities. Myths can be thought of as stories that might or might not be true, but that nevertheless carry with them an important personal, sociological, and cultural meaning. They make the unfamiliar familiar, the complex simple, and the distant past interlinked with the present.

Myths range from the intimate to the public, including personal myths as well as collective ones. In therapeutic contexts, myths have been found to serve a critical function for establishing both a personal and collective identity and belonging, supporting moral values and providing essential meaning in times when the world feels senseless (May 1991). While myths permeate multiple domains of human life, the focus of this entry is primarily on myths that refer to the existence and origin of communities, such as ethnic groups, nations, and political groups, and so, references to “myths” tend to imply collectively held and believed myths.

How do myths differ from other types of cultural stories? What is the difference between myths, legends, folktales, and fables? Folktales and fables can be understood as seasonal and entertaining stories often based on fictitious events, retold in acts of sociability. Legends in contrast, while less fictitious than folktales, tend to lack the persuasive power that myths hold (Lincoln 2014; Malinowski 1926). Last, myths can be understood as a category of stories that are sacred, which become embodied and reproduced through rituals, moral codes, and values, and through the social organization of

human civilization. These stories, unlike folktales, for example, do not persist because they are interesting fictitious narratives, but instead, myths form the backdrop against which reality might be shaped and understood.

Within the social sciences, the earliest influential work on myths comes from the anthropologist Branislav Malinowski (1926). Malinowski, through his studies of preliterate societies, argues that myths form a vital component of human civilizations, as they play an active role in expressing and codifying beliefs and enforcing moral values. Malinowski (1926, p. 12) considers a myth “not an aimless outpouring of vain imaginings, but a hard-working, extremely important cultural force” that is not just a story told within a community, but “a reality lived.” As such, Malinowski considers myths as both embedded within discourse and reproduced through social and cultural practices.

Other authors offer similar definitions of myths that emphasize not the historical accuracy of the stories, but about the possibilities of what might be achieved through their communication. Schöpplin argues that myths are “about perceptions rather than historically validated truths (in so far as these exist at all), about the ways in which communities regard certain propositions as normal and natural and others as perverse and alien” (1997, p. 19). The ability of myths to normalize certain beliefs and practices is echoed by Barthes who sees myths as having “the task of giving an historical intention a natural justification, and making contingency appear eternal.” (2006, p. 268). The emphasis on making the unfamiliar familiar and giving it meaning is also noted in the work of Bottici (2007, p. 13), who similarly explains that myths “provide names through which the unknown first becomes masterable, but they also provide narratives, which by inserting events into a plot, can produce and reproduce significance.”

Taking the above interpretations into consideration, we can see that there are a few key features shared among scholars in what defines a myth. Myths can be understood as types of stories, or histories in narrative form, which are told and transmitted across time and space. Their power

lies not in what is said (or in the ability to retain and reiterate accurately events of the past), but in what is, and might be, possible through references to them. Myths construct and legitimize the possible through social, cultural, and political arrangements, practices, and rituals. They do so through the construction of simple narratives that communicate complex things about human relations, histories and moralities within societies. Last, by traversing time and space and decoupling the narratives from temporalities, myths continue to be as relevant in the present life of a community as they had been in the past. This is why myths become particularly potent in times of sociopolitical change and transition, as will be discussed below.

The Social and Political Function of Myths

Regardless of their historical accuracy, myths are pragmatic. They always serve a particular purpose for those who believe in them and reproduce them (through both discourse and practice). Returning back to Malinowski, he succinctly summarizes the function of myths by explaining that:

Myth fulfils in primitive culture an indispensable function: it expresses, enhances, and codifies belief; it safeguards and enforces morality; it vouches for the efficiency of ritual and contains practical rules for the guidance of man. (1926, p. 19)

As such, myths both narrate events of the past and serve a practical function for understanding the present. By narrating events of the past in certain ways, societies and cultures actively engage in reinforcing a certain world order and moral wisdom. Therefore, it should be noted that myths are not static or fixed, but adaptable to changing circumstances, and used in ways that serve contemporary needs.

A particularly important kind of myth that illustrates this active dimension, explored in the context of nations and their political order, is myths of origin, or foundational myths. In particular, a key focus within this literature has been on understanding how myths of the origin of a nation (or ethnic group) become constructed and

mobilized for political purposes. These types of myths refer to the stories told about epic battles, struggles, or sacrifices that mark the beginning of the historical time of a national group. Their appeal is often emotional and tends to emphasize a sense of historical injustice or victimhood which comes to define the identity of a social group.

What is crucial to keep in mind is that the power of myths comes not from their ability to retell a particular event (or set of events) in an accurate and enticing manner, but rather from their ability to draw links between actions and events of the past, and those of the present. For members of nations for whom a particular foundational myth is salient, it is important to understand not only what is said in narrating the myth, but also what it says about the group, its norms, values, and morals. Given this, myths are often-times used as templates for making sense of changes and uncertainties in the present, as they hold the possibility of becoming guiding lenses through which new challenges are made sense of (Obradović 2019).

Successful myths of origin are those that are able to adapt to changes. In order to do so, these myths must be rooted in historical experiences (or real events) but also be vague enough to mirror the local context and circumstances and so remain relevant across time. In order to survive, myths need to be told and retold, both by institutional forces, but more importantly by social actors. By reproducing myths, social actors also become influenced by the meaning they carry for understanding the history of the group, what political actions become legitimized, and what possible future becomes desirable.

However, while this might serve as a key source of power for myths, it also, according to Zerubavel (1995), can serve as their main point of weakness, because the same historical event, which serves as the foundational myth of a society, holds the possibility of being interpreted by different groups in different ways. Indeed, the same event can be retold by different social groups in contrasting ways, as is exemplified in the retelling of the myth of Masada in Israel (Zerubavel 1995). According to Zerubavel (1995), the multivocality of national myths,

namely their ability to be told in different ways, allows them to stay alive across time, but it can also lead to the emergence of counternarratives, which can challenge the meaning of the myth.

Research on Myths

How do we “do” research on myths, their function as cultural forces, and their ability to provide politics with legitimacy?

A first crucial thing to consider is that myths need to be understood within the context of their existence. If we remove the telling of a myth (as a story) from the context that it exists in, we strip it of the meaning and implications it holds for social and cultural norms and practices. Anyone that reads Malinowski’s (1926) stories from his research will be lost in understanding what these stories mean for the local population without the interpretative lens offered. As such, it is important to study myths in context, and to have extensive enough contextual knowledge to interpret how they become embedded within the social fabric of everyday life. Without this “insider” understanding, we might be unable to grasp what a myth “does,” and only capture what it says, on a semantic level.

Second, there are different ways in which we can study myths and their power. Among anthropologists like Malinowski’s ethnographic work, being deeply embedded within the community, and observing interactions and behaviors of community members, is one avenue to follow to understand how the stories shape the cultural rituals of a particular community. Thus, anthropologists have tended to focus on the existence and power of sacred myths in communities and tribes. More recently, other scholars, particularly those within sociology, political science, and social psychology, have tended to focus on the existence of myths in more complex and modern societies.

An important area of research for this latter group of scholars is centered on myths within the context of nations and their histories. Different terminologies are used within this research, for example, researchers discussing foundational myths, nationalist myths, and political myths. A

nationalist myth, as Bell (2003, p. 75) explains, is “a story that simplifies, dramatizes and selectively narrates the story of a nation’s past and its place in the world.” Nationalist myths are similar to myths of origin, as they tell the story of epic events that became defining for the in-group’s identity, future, and perspective on the world. But they can also be less explicitly rooted in exact events, and instead account for the origin of a people, on a more abstract level. For example, Jovchelovitch’s (2012) research in Brazil shows how foundational myths of the Brazilian people are kept alive in the contemporary public sphere but are used in contradictory and complex ways, to both emphasize negative and positive aspects of the people. For example, she argues that the national myths, which anchor the mixed nature of the “Brazilian” in corruption and impure blood, are also reclaimed and used to celebrate diversity, the positivity of otherness, and to champion positive and bottom-up social regeneration. This study shows how myths become narratives of the origins that permeate temporal boundaries and historical contexts, taking on a variety of forms to adapt to changing circumstances.

Another avenue of research on myths and their functional role in societies is to examine the presence of myths within in political discourse. For example, research on political myths and their ability to legitimize particular political actions is interesting to consider here. Esch (2010) draws on official level texts from the Bush administrations’ “War on Terror” initiative to how political myths (such as that of American Exceptionalism) become utilized to legitimize the post-9/11 policies of the US government and ultimately providing justification for the invasion of Afghanistan in 2001. Her work shows that myths can become embedded in political discourse in ways that allow for history, and the meaning it carries, to be moved from the past to the present, ultimately constructing certain future possible projects as more or less legitimate.

What is interesting to reflect on, in relation to the political myths discussed above, is that the domain of knowledge within which politics play out tends to appeal to knowledge and reason. Rationality becomes a source of legitimacy for

political authority, and other forms of knowledge are seen as less valuable. Yet myths are powerful precisely because they appeal to other forms of knowledge, to human emotions, and to our need to make sense of the world around us. As such, it would be mistaken to believe that myths exist outside our rational thinking. As Della Sala (2010, p. 3) argues, “myth is not necessarily an antithesis to knowledge and reason.” But rather, it serves as a “valuable instrument in determining what is right and what is to be done in governing” (p. 3).

This sentiment is echoed among other scholars of myths and their societal function, who consider the juxtaposition of mythos and logos as problematic and unproductive (Lincoln 1999). Instead of examining the extent to which myths reflect accurately the historical events that they are rooted in, research on myths should (as has predominantly) be focused on what realities become possible, and also what realities become restricted, through the telling and retelling of myths.

What Do Myths Make Possible and What Might Limit the Possibility of Myths?

Myths bind individuals together into communities and nations and, as such, play a role in making possible the existence of social groups as atemporal and essential. By narrating the origin of a group, myths also bind present-day in-group members, to members of the past, and make certain actions in the present more or less desirable (Obradović 2019). In a study conducted in Serbia, examining public ambivalence toward EU integration, it was found that the foundational myth of Serbia (resting on the simultaneous victory and defeat in the Battle of Kosovo) was very much alive in the present through both its links to physical territory as well as psychological identification with the nation. This link was in turn used to support arguments of resistance toward any political change that was threatening to the meaning behind the myth and, by implication, the identity of the nation.

Myths make possible the existence of temporally continuous and essentialized group identities for particular social and political purposes. Myths

make possible the existence of imagined political communities (Anderson 1991). This important force of myths is often seen in times of social turmoil or transformation. The increased social uncertainty and instability that come with change make simple stories appealing, as they offer a blueprint for making familiar the unfamiliar and unknown. Because they remain as lived realities that share the sociocultural values and morals of a group, myths offer reassurance in times of insecurity, instability, and change. Using narratives that carry a moral message, myths, and the histories that are drawn upon, both open up possibilities for the future and, at the same time, limit them.

Yet, with modern societies, modern forms of keeping historical records are possible, an innovation which might potentially limit the power of myths in the future. The existence of objective records of historical events could ensure that inconsistencies between mythical stories and the events they draw on might need to be limited. Another key dimension of society that might challenge the possibility of myths is education. The institutionalization of particular representations of history, and their transmission through education, might make myths into folktales, removing their authority and moral message and instead turning them into entertaining stories told by communities, but lacking the power to shape communities as they had done in the past.

While these innovations, alongside mass and social media, might indeed be posing a challenge for mythologies and their social power, the increasing appeal to history, the rise in nostalgic thinking, and the importance of social cohesion and group belonging, all seem to attest to the continued presence and prevalence of myths within modern societies and social groups. Future research should explore how myths become appropriated and communicated through new mediums, and their mobilizing power.

Conclusion

Myths tend to be equated with false beliefs. Like conspiracy theories, they are seen as alternative versions of reality, rooted in real events but narrated

in ways that challenge rationality and reason. However, myths play a powerful cultural, social, and political role in both premodern and modern societies. As has been discussed in the present entry, myths should be understood as types of stories that exist in contexts that range from tribes (Malinowski 1926) to supranational unions (Della Sala 2010). Myths are stories, they often take a narrative form, and they are told and retold for a particular purpose. As the purpose and need of a community changes, so does the telling of a myth.

This is so not because myths need to represent historical events in an objective and factual manner, but because, in the telling of a mythical story, individuals and communities reproduce certain cultural values, norms, and morals that function to legitimize existing sociopolitical arrangements, practices, and rituals. Myths are important political tools, and they are often mobilized as such, particularly to garner support for political actions. These actions can be aimed at reproducing the status quo, or challenging it. As such, myths make possible the binding of communities of the past, with their actors of the present, and those envisioned leading the group in the future. This interlinking gives crucial meaning to actions, behaviors, and practices of the group.

Myths might be equated with false beliefs, yet their ability to shape possible lived realities makes them as powerful as they have been over preceding centuries and, as such, an important study within the social sciences.

Cross-References

- [Constructive Memory](#)
- [Narratives](#)
- [Storytelling](#)

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Narrative Therapy

Bridgid Hess
Psychology, Webster University Geneva,
Geneva, Switzerland

Abstract

This chapter will give you an idea of the basic assumptions that narrative therapy makes, some people who have influenced it and its philosophical history. It will also give some practice-based ways of forming and crafting questions using deconstructive language that opens space for alternate stories to be told. Throughout the chapter, I foreground embodied language that is rich in metaphor and lived experience. I have broken with the tradition of giving you theory at the beginning in favor of placing it in a supportive position towards the end. You could equally read the section on its background history and philosophy at the beginning if that makes more sense to you.

Keywords

Social construction · Post-structural philosophy · Deconstruction · Power and knowledge · Culture · Language · Embodied knowledge · Discourse

Introduction

I was drawn to narrative therapy by ways of working that empower people and communities to write their own life stories, returning local knowledge to the center. It moves away from a structuralist top-down approach, where people are understood to have a core identity and problems are surface manifestations of deeper truths that need expert interpretation (White 2000, p. 61). It favors a post-structural approach, where identity is fluid and grows like a rhizome rather than a tap root, like potatoes that grow in communities or clumps and spread underground where identities pop-up where least expected. I have harvested many crops of potatoes as well as identities in this way over the years, picking where I had not sown and reaping through other peoples' wisdom. This allows for multiple possibilities on an ever-evolving landscape of possibility where our actions, along with others, constitute our beliefs and identities (White and Epston 1990). Questions draw people away from an intrapsychic internalized state of being. For example, an internalized question might be, "How does this make you feel?". This focuses on an internal dynamic within a person and assumes a form of depth or core "you" that feels something. We ask questions where the feeling is in relationship to a context, for example, "What does this feeling do to you?"

or “What does this feeling make you think or believe about yourself?” or “What would you call this feeling?”. This form of enquiry opens space to explore a feeling as something that is influencing or affecting a person, like a weather system and always in relationship to a context.

I found myself living and working for many years in Southern Africa where the volatile tides of history were constantly present in the power relationships that were both past and present (Hess 2006). Much of their local knowledge had been overtaken by Western forms of therapy that had focused on the individual autonomous self.

Narrative therapy made sense to me. It moved away from individualist, more western models of psychotherapy and psychopathology, favoring local collective knowledge and the values and intentions that people hold for their lives. It also drew me in through its rich descriptive metaphors. I have found metaphors and stories invaluable when working in a cross-cultural context, where even a language is limited. An example of this was work I did on the mines in South Africa. I would train HIV facilitators (often with little English) for a week on being HIV facilitators. Fact-based learning had not had much impact. I worked with their local knowledge and beliefs. Together we drew pictures of villages, wisdom figures, and what they valued in their communities. We were able then to explore the ways in which HIV worked within their embodied contexts. Many believed HIV was a myth, created by a white man to kill them. They often spoke in their own languages, translating for me as they saw appropriate, which located control more in their hands. I was constantly amazed at how fully engaged they were in the process. Although the odds were stacked against me in my color, gender, language, and history of oppression, there was something in the work that held us on the same page. We were able to explore ways through drawing on boards in which problems have trapped and affected them and how HIV worked in their communities. This gave opportunities for other stories to emerge and for them to be in charge of their own stories. This challenges the modern structuralist notion of pathology that has labelled people as somehow lacking.

Stories Waiting to Be Told

Narrative therapy is, as you might imagine, about how we tell our stories, what we select, and what we consider newsworthy to talk about. Walther and Carey (2009, p. 6) put it this way: “As therapists, we are interested in notions that are supportive of new possibilities and multiple-storied lives. What else might we see or hear in a person’s situation, other than a singular description?”

I was invited some years ago to a church-based group to speak on marriage. They had been listening to an American video series that focused on Western metaphors around a dyadic unit of husband and wife. I asked the question “What are the stories in your families that hold the wisdom and hope for the future?”. This intentional question situated them in their own history and traditions, rather than in some ahistoric linear assumption of what marriage should look like from the dominant view of the church at the time. The conversation turned from passive recipients to co-creators of living stories, moving from heads to living memories. They gave such rich and full descriptions of people who had shaped their lives. Some of their own parents had broken traditional gendered boundaries, in order to help carry water or care for children. These are the stories waiting to be told, stories that challenge some of the unexamined assumptions we make about how life should look. These stories also contradicted much of the dominant gender-based violence that goes on in the community, building up different ways of living respectfully in the world. This in turn influences how we speak and make meaning of our lives and takes us on a new trajectory.

Narrative therapists could then be described as helping to critically edit texts that have become taken-for-granted as assumed truth. It has taken much of its wisdom and metaphors from the arts, post-structural philosophy, and discursive practices (a longer discussion of which you will find later in this chapter). Foucault (1988, p. 155) when describing discourse, says “Critique does not consist in saying that things are not good the way they are. It consists in seeing on what type of assumptions, of familiar notions, of established

and unexamined ways of thinking these accepted practices are based.”

The therapist’s position is like an investigative journalist who is intrigued by the twists and turns of the journey. They act as an editor on the person’s own text and are particularly attentive and curious about parts of stories that might have been overlooked when a person focuses on a “problem story.” The assumption is that every story has its weaknesses and every story is context dependent. Morgan (2000, p. 3) says “I sometimes think of the possibilities for the directions of the conversation as if they are roads on a journey. There are many cross-roads, intersections, paths and tracks to choose from. With each step, a new and different cross road or intersection emerges – forward, back, right, left, diagonal, in differing degrees. With each step that I take with the person consulting me, we are opening more possible directions. We can choose where to go and what to leave behind.”

Maps on a Journey

Maps show a migration on a journey that is moving, changing, and evolving. White called this a migration of identity where possibility is constantly evolving into new destinations. He loved maps and just before his unexpected early death in 2008, devoted a whole book to maps of narrative practice. He says “When I was a young boy it was maps that made it possible for me to dream those other worlds up and imaginatively transport myself to other places” (White 2000, p. 3). Walther and Carey (2009, p. 6) develop this idea by make use of Deluze’s concept of “deterritorialisation” or a “line of flight” from the territory that we are experiencing in order to reach a different terrain of life which offers other possibilities.

We select certain “truths” or incidents as landmarks on our maps. These landmarks are supported and linked over time by different events in order to come to certain conclusions about our identity. Morgan (2000, p. 7) uses an analogy of stars in the sky. Our eyes are drawn to familiar constellations, joining the dots in order to code

our experience. As therapists, we focus on finding different stars and forming new constellations or maps that can help show us a new direction that leads to a different more life-giving conclusion. In this way, we move from what is described as a thin description towards a thick description, a term developed in social anthropologist (Geertz 1973).

Recent developments that link neuroscience and narrative therapy show that our brains have more ability to change than we thought. Neural pathways are programmed into dominant fear-based maps that aid our ability to survive (Beaudoin and Zimmerman 2011). Finding exceptions to these pathways, alternate stories, supports our brains in creating new preferred maps that generate different experiences. These exceptions to the rule are not located in the thinking brain but rather built up through lived experience and relational practice in the stories we tell about ourselves.

This involves developing a thorough description of the territory as we map the trajectory of the problem story and how it has evolved and developed. After examining these maps, White suggests that exploring alternate maps helped him “to respond to people in ways that open for them to explore neglected aspects of the territories of their own lives. This provides people with avenues of possibility for addressing the predicaments and problems of their lives in ways that they wouldn’t have imagined” (2007, p. 5). People become curious about territories that they might have neglected or overlooked. A major influence in White’s earlier work was expanding on Gregory Bateson’s question “what restrains people from moving on with their lives?”. Bateson was interested in how organisms could code something new and called this “news of difference” in which an organism only changes over time when differences are recognized and coded (White 1986).

Externalizing Conversations

Narrative therapy is perhaps best known for the way it externalizes a problem and separates a person from its negative influence. White (2007,

p. 4) says “amongst other things, externalising conversations have made it possible for people to separate their sense of identity from problem-saturated or deficit-centred accounts of who they are, and this has provided a basis for them to join with others in the rich descriptions of alternative accounts of their lives, of their relationships, and of their identities.”

The iconic example of this was White’s work with a child who suffered from encopresis. The child called the problem “sneaky poo” (White 1984). Another example he gives (2007, pp. 11–22) is with a family who come to consult with him about their son who is diagnosed with ADHD. It is particularly interesting how he skillfully deconstructs the diagnosis by asking questions such as “what sort of ADHD does he suffer from?” and “how would you know what ADHD it looks like?”. There are many transcripts of conversations that demonstrate this way of externalizing (Morgan 2000; White 2000; Freedman and Combs 1996).

It is important to mention here that externalizing conversations are not about the individual autonomous self on a private journey. The skill involves a constant weaving of stories that are connected and in relationship with other people. It fosters a relational sense of identity (White 2000, p. 59). Freedman and Combs (1996, p.49) describes an externalizing conversation she had with herself. She had always considered herself a shy person. She changed her perception of shyness to the question “what are the effects of shyness in my life?”. This altered her experience of shyness and allowed her to begin a process of freeing herself from this limitation.

Developing a Preferred Story

A person came to consult with me concerning a very frightening situation he was about to go into; we described it as going back into the lion’s mouth. He came to rather a negative and thin conclusion about himself, describing himself as “passive-aggressive.” I asked him more about passive-aggression and what it had made him believe about himself. I also asked how it came about that he believed this to be true. He told me

of many times that he had given in to other people through fear. This had led him to being walked over. He described how ashamed he was of this behavior. I was interested in times where this has not been true. He gave an example of stopping in a dark tunnel in order to protect a homeless man who was being bullied. After the conversation, I asked him to write what was important to him in our conversation. This was partly to consolidate his experience of the session and also for me to get a better idea of the direction he wanted to move towards. This was the beginning of us generating new more empowering maps. It also offered us a way of recording our conversation. He was in control of his own words and notes. In the session, we had used a metaphor for this passive-aggressive behavior. It was like a person who comes upon a pride of lion. The person rolls onto his back into a subservient position, as a form of protection from being hurt. He writes:

This subservient position - don’t eat me, I am silent and harmless. I roll over in the company of dominant people - allow myself to be steamrollered, letting my boundaries be transgressed, not realising it until it’s too late. And yet, I am going back into ‘the lions mouth’. It is an act of courage - the boy going back down the tunnel to stand up for the homeless man. (An accurate metaphor). No fear of consequence in that moment. Simply ‘I must. It’s right’.

In this instance, we found what appeared to be an arbitrary incident of courage that contradicted the dominant story of passive-aggressive that had taken on a truth status, a sparkling moment that is waiting to take its rightful place in the story.

Questions are invited that interpret the problem as relating to a transition or rite of passage in a person’s life. Questions are oriented towards what they might be needing to separate themselves from. There would be a focus of enquiry about beliefs that are not helping them to move forward and finding out upon what assumptions these beliefs are based. The person is then asked questions that connect some past events when they might have done things that work and projecting this into the future as with the dark tunnel. In order to develop a richer description of this, we could ask what this knowledge might tell them about their problem-solving abilities. This opens up new

lines of enquiry that offer opportunities for particular markers on their maps, locating them all the time as experts on their own knowledge.

Markers on a Map

Alternate stories are built upon new evidence as it emerges. These become defining moments and provide experiences that give markers on a map where people can build up alternate stories. These stories become “rites of passage” (White and Epston 1990). A rite of passage allows a person or a community to reconstruct their journey. This separates the problem from the person and avoids classifications that diagnose problems as breakdowns or regression or dysfunction, metaphors that are associated with psychopathology.

Letters can be used as markers on a map. I once had a client who experienced particular isolation. He was challenging his sexual identity in a country where “gay” was considered a crime. We spent the end of each session writing about what we had talked about in the form of a letter from me to him, where I positioned myself as a witness on his journey from isolation to belonging. He contacted me some years later. He was distraught. He thought his box of letters had been stolen and these were some of his most precious belongings. Epston (1994) suggests that one letter can be as effective as three therapeutic sessions. Denborough (2002) makes use of song as a way of witnessing and building different identities. He used this on one occasion with a man in prison, for whom a written letter would have not been helpful as he had limited skills in writing and reading.

We frequently use a flip chart to mark our journey on. I particularly like working this way with pictures that we can build up. I find pictures and symbols capture size and space and position of a person in relation to a problem. A side benefit of this way of working reduces intensity as both therapist and client are exploring the picture on the board. It graphically positions the therapeutic alliance working together on a problem that is externalized on a board.

Outsider witnessing (White 2000, p. 165), what was earlier called reflecting teams

(Anderson 1987), is another way of forming a marker on a map. It involves the re-telling of preferred stories before an audience of carefully chosen outsider witnesses. This helps to shape different identities and thicken new stories. This is set in contrast to rituals and ceremonies that degrade or judge people in life (as can often be witnessed in today’s world on social media) or where someone is ganged up on in a work context or unfairly treated. This practice evolved from an earlier idea of what Peggy Papp (1980) called a “Greek Chorus” or “gossiping in the presence of.” The importance of an outsider witness group is that the group hold a conversation in front of, but not including, the client. The group focuses on their own experience of the conversation and what they might have learnt from the client and how this relates to themselves. It becomes a parallel knitting together of experiences that are not coming from a top-down or expert position.

Celebrations can be used or certificates for young people. Re-membling groups can be generated where a person selects people who they would like to play on their team. These become support groups for alternate stories that are supported in community action.

A Background History

Narrative therapy straddles a time in history that has been moving from a modernist worldview towards a post-modern perspective in which identity is more fluid and constantly changing, depending on the context and time in history we find ourselves in and this shapes our perceptions of life (Burr 2003; Hart 1997).

The first wave of the movement began in the 1960s. Groups in North America, including social anthropologists, social scientists, human biologists, social workers, and psychiatrists, began to move away from models of psychopathology that had influenced psychology over the previous 100 years and explore some of the ideas emerging in the social sciences.

What they all had in common was an interest in the human species and how it evolves and changes within its larger environment. This was very

different ground to be exploring in the dominant climate of psychology. It turned away from intrapsychic psychology that had been using metaphors that focused on the health and medical diagnosis of an individual person, towards how people function in groups, and what helps them change and evolve.

It shifted the thinking away from understanding a person as broken or in need of fixing, to an evolutionary idea of adapting and changing.

The movement began looking at families in a more holistic way, where the individual was a part of a much larger system that functioned within certain rules and conventions. This gave rise to systemic family therapy. In this first wave of systemic thinking, problems were understood as a symptom of family functioning. Postwar metaphors were used, borrowed from cybernetics, in which families were normalized as closed systems of homeostasis (as in a central heating system). The metaphors shifted and changed with the times to communication theories and dysfunction. These were all machine-like metaphors that were and still are used. The movement was influenced by social constructivism, particularly the work of Maturana and Varela who explored the biology of perception and cognition of the nervous system as it feels its way towards safety (Freedman and Combs 1996, p. 26).

The second wave in family therapy took many of its metaphors from literary criticism and the arts embedded in postmodernist thinking (Lowe 1991). These movements challenged some of the earlier assumptions around families as closed systems or feedback loops. It continued to evolve towards the next wave of family therapy where power, gender, and inequality were taken seriously.

Birth of Narrative Therapy as a Social Construction of Reality

These earlier movements gave rise to narrative therapy, which moved away from understanding families as systems. The boundaries between the self and other, expert, and patient began to

dissolve and narrative therapy as we know it today was birthed by Michael White in Australia and David Epston in New Zealand. They brought out a book called *Narrative Means to Therapeutic Ends* (White and Epston 1990). They integrated into a therapeutic model the ways in which power and knowledge work and deconstructed language in a way that was empowering to those who came to consult with him. Their careful use of language was a constant deconstruction of some of the taken-for-granted assumptions, selecting words that did not pathologize. They articulated in the therapeutic world much of the philosophy at a time when certainty was in the dock and truth was being cross-examined. It was a heady era in philosophy where words in the post-structuralist and social constructionist movements were not understood as having any hidden meaning of truth but were contextual.

They traced how meanings and metaphors were used over history in order to make sense of the world we live in, particularly how Foucault systematically unpacked the assumed truths of each age and showed how certain experiences have become enshrined and given the status of truth. Building on this, narrative therapy began to challenge the idea of a singular description of a person in favor of multiple stories that evolve over time.

This introduced an epistemological shift in the way we see and understand the world, moving from modernist notions where reality and facts are knowable, towards understanding life as a social construction of reality. Parry and Doan (1994, p. 1) say “Once upon a time, everything was understood through stories. Stories were always called upon to make things understandable. . . . The answers they gave did not have to be literally true; they only had to satisfy people’s curiosity by providing an answer, less for the mind than for the soul.” It is the meaningfulness of the answers given rather than their factual truthfulness that gives beliefs credibility. In a therapeutic sense, this can mean that people get trapped and labelled within dominant beliefs until new meanings emerge from parts of a story that were not considered important.

It concludes all the things that make up the psychological fabric of “reality” arise through interaction over time. “People together construct their realities as they live them and make meaning from them” (Freedman and Combs 1996, p. 23). Some years ago, when visiting Botswana, I was reading a book about the bushmen/San of the Kalahari Desert. They consistently raised four children. The explanation was simple. Four was a sustainable number for the group. They had a ritual that any subsequent baby was taken into the desert by the mother and the mother returned empty-handed. This creates an evolving set of meanings created in social interaction that help a group to survive. It could of course be constructed that she was a murderer.

Deconstructing the Text

Derrida’s work on deconstruction influenced and helped to craft how language is used in the movement. Words assume socially sanctioned meanings that form our thinking and constitute our world (Anderson and Goolishian 1988; Foucault 1970; Burr 2003). Take the word God for example. There is a dominant construction, which is not said but implied, that of a male patriarch who lives in a separate domain. This word has changed and evolved to favor words like “the divine” which embraces a more Eastern texture of global wisdom, creating more space and collapsing the boundary between God and me. Derrida pointed the way to understanding that what is not written is as important as what is written; what is said always stands in relationship to what is not said. Narrative therapy explored this by asking questions that find out what lies between the lines of dominant texts, what is not said but assumed. This is what Bruner, Vygotsky, and Derrida had called “the absent but implicit.”

Deconstruction is used in narrative therapy to formulate questions that challenge the taken-for-granted assumptions in order to find where there is not a problem. White refers to this a “re-authoring” of stories. Dominant pathologizing stories are overtaken by other preferred life-giving

stories that were not previously considered of importance.

Deconstructive Questions

I have given some examples of deconstruction in action. Questions such as “how did you come to believe this about yourself?” or “what was shyness trying to do to you?” or “Was there a time when this negative belief about yourself was not true and you stood up to passive-aggression?”. Other deconstructive questions that begin to build up alternate descriptions of the map might be “Who else knows this about you?”. All of these questions challenge the pathology of identity and assume that a person is so much more than their problems.

Deconstructive questions unpack some of the assumptions around which, for example, a pathology survives. Morgan (2000, p. 45) writes, “Anorexia and bulimia nevosa can only survive in cultures that value thinness, where success and competence are judged in terms of body shape and size and in cultures which promote self-surveillance and individualism.”

Conclusion

Narrative therapy takes a critical stance toward taken-for-granted knowledge and how we position ourselves within a therapeutic relationship. It also understands how violent language can be in the way it is constructed. In this way, narrative therapy pays great attention to language and its multiple meanings. It challenges some of our taken-for-granted truths of our age, reflected both in the way we live in a Western society and the therapies that we practice (Hess 2006). Narrative therapy opens space for new possibilities of experiencing life to happen. It challenges problems and the restrictive grip they have on us, as well as opening up new possibilities of stories waiting to be told. It has contributed to the conversation by inserting post-structural theories and turning them into conversations.

This moves from words such as “expert,” “diagnosis,” and a “patient” towards a deep collaboration of shared knowledge and power within a community of “knowing.” It draws attention to both culture and history and explores people as socially constructed beings who make sense of their world at a certain age and time in history. In this way, it moves away from intrapsychic ideas of the individual autonomous “self” towards identity being a multistoried affair of life-giving preferred identities.

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Narratives

Emily LeRoux-Rutledge

University of the West of England, Bristol, UK

Abstract

While many definitions of narrative exist, at its most basic, a narrative is a temporal sequence of events with a plot connecting those events. When we express our identity – who we are – we often do so in narrative form, telling a life story that helps us to understand, and indeed to construct who we are. This involves not only making sense of our past, but also shaping how we want to be seen in the present, and imagining who we could become in the future. Indeed, whenever we think back, selecting events from our past to construct our life stories, we are simultaneously communicating our goals and

aspirations for our future possible selves. Such goals and aspirations, however, are always constructed in particular social contexts, and these social contexts provide narrative templates, or *public narratives* – such as “rags to riches” – which afford models for our stories. Public narratives can be difficult to pin down (they are usually not written down anywhere), but we can think about them as the aggregate of many stories. Importantly, they are normative, and widely known, communicating what constitutes a good life for a person like us, in our culture. Against their backdrop, we negotiate our personal stories. Public narratives are not fixed, however, and they are multiple, even in a given culture. Consequently, there is a debate among narrative scholars about whether we select and *use* public narratives to construct ourselves, or whether *they construct us*. Ultimately, most scholars recognize that the interplay is dynamic; for, while it is true that we are in some sense constrained by the public narratives available to us in constructing our life stories, it is equally true that, if enough people reconstitute their life stories, these can reconfigure public narratives themselves – opening up new possible ways of living and being. Herein lies the possibility for social change.

Keywords

Narrative · Identity · Self · Aspiration

Introduction

There is no agreed definition of narrative – a point on which most narrative scholars agree (Squire et al. 2013). Common to most definitions are two structural features of narrative: *temporal sequence* and *plot*. Definitions of narrative tend to emphasize time, or temporal sequence (Andrews et al. 2013; McAdams 2001; Rappaport 2000; Ricoeur 1984; Sarbin 1986). Laszlo, for example, defines narrative as:

Accounts of events, which involve some temporal and/or causal coherence. ... [and which require] some goal-directed action of living or personified actors taking place in time. (Laszlo 2014, p. 3)

Temporal sequence, however, is not sufficient to define narrative; there must be *implied causation* linking one event to the next (Murray 2003; Squire et al. 2013). Implied causation is what makes narratives different from chronology. A list of occurrences, in which events follow each other but have no apparent relation to one another, is generally *not* characterized as narrative (Czarniawska-Joerges 2004). In narrative, events are inferred to have occurred *because* of the events preceding them. Causal inference is what starts to turn chronology into a story. This is what gives narrative its *plot*.

Plot is the second structural feature central to most definitions of narrative (Bruner 1986; McAdams 2001; Murray 2003; Sarbin 1986; Somers 1994). The plot connects narrative events together and gives them significance. It is the plot that gives a narrative its meaning. Although temporal sequence and plot are the *defining* structural features of narrative, narrative scholars have also drawn attention to other structural features – including *beginnings, middles and endings*, and the *dual landscape* (Booker 2004; Boonzaier and Schalkwyk 2011; Riessman 2008). Some of the scholars who adhere to this view of narrative go so far as to claim there is one *universal* story structure, which can describe all stories. Laszlo characterizes the universal structure as follows:

A full blown narrative involves an initial steady state which implies the legitimate order of things including the characters' normal wishes and beliefs, a trouble which disturbs this state, efforts for re-establishing the normal state, a new, often transformed state and an evaluation in conclusion, which draws the moral of the story. (Laszlo 2014, p. 3)

However, there have been various challenges to the claim that stories have a universal story structure, or a beginning, middle, and end – notably, by scholars who study political narratives and personal life narratives. Scholars such as Andrews (2007), who study political narratives, argue that political narratives do not have endings, because that would imply no future. It would imply, in a sense, that all of society's problems had been solved; therefore, political narrative must always be unfolding. Similarly, human lives are also

constantly unfolding. As Crossley (2000) explains, we are always in the middle of our stories, while Andrews maintains that the only beginnings, middles, and endings to be found in personal life narratives are those which are artificially attributed (2007). This makes the notion of beginnings, middles, and endings somewhat problematic.

Another notable feature of narrative structure, which some scholars consider central, is its *dual landscape* (Bruner 1986; Laszlo 2014). Narrative often takes place on a landscape of *action* and a landscape of *consciousness*. The landscape of action is where we see the events of the story play out. The landscape of consciousness is where we come to know the inner worlds of the protagonists, including what they know, think, and feel. This is important because narratives are often not only about what happens, but also about what human beings *intend* (Bruner 1986; Laszlo 2014; McAdams 2001). Recognizing that stories have a dual landscape opens up narrative to the study of meaning. According to Laszlo:

When [Bruner] amended the landscape of action (what characters do in a story) with the landscape of consciousness (what we know about their beliefs, intentions, wishes and emotions), he opened up the opportunity for studying the meaning of actions. (Laszlo 2014, p. 4)

The Narrative Conceptualization of Identity

Meaning is what narrative is really about, and when we tell stories about *ourselves*, we are typically using narratives to construct our identities. Identity is often understood as the answer to the question “Who am I?” Definitions of identity are extremely diverse in the social sciences (Ramaraajan 2014); however, a range of scholars advocate approaching identity as narrative (Bruner 2004; Laszlo 2014; McAdams 2001; Somers 1994). Such an approach allows us to recognize that the primary way in which we make sense of ourselves, the social world, and our place within the social world is through narrative (Bruner 1990). People tell themselves, and

others, *stories about themselves* in their social context, which help them to understand – and indeed, to construct – who they are, and to frame their possibilities for action (Bruner 2003).

Aspirations, Goals, and Possible Selves

Telling life stories involves engaging with the past – creating meaning out of, and making sense of, the things that have happened to us in our lives. It also involves engaging with the present – building a picture of who we are, and how we want to be seen. Finally, and crucially, it involves engaging with the future – aspiring, planning, and imagining who we could become (Boonzaier and Schalkwyk 2011; Bruner 2003; Mankowski and Rappaport 1995; Polkinghorne 1988).

Ideas about the future may be *explicitly* narrated in the course of a life story. In particular, a person may tell stories about who they could, and would like to become. According to Markus and Nurius, goals and aspirations always take the form of imagined *possible selves*; they are never abstract (1986). For example, although we may say that we aspire to education; really we aspire to *be* an educated person. The way we aspire is by constructing scenarios about who we *might* be, who we *want* to be, and who we do *not* want to be. This fits with the thinking of narrative scholars who argue that hopes, dreams, and aspirations are narratives (Crossley 2000; Laszlo 2014; Sarbin 1986). Within a personal life story, one sometimes finds such aspirational narratives expressly articulated. For example, a South Sudanese woman narrates:

I want to bring my little brothers, my younger brothers, up, to make them go to school. If I have [the] power of supporting them, then, to at least make them learn, not to be like me. ‘Cause as you understand I’ve already broke out of school and I don’t know whether I will go back or not. So, I’m willing to take them to school and make them learn, get what they want in future. (LeRoux-Rutledge 2020)

There is a clear story here, in which the narrator sees herself bringing up her younger brothers, impressing upon them the importance of

education, supporting them through school, and witnessing them realize their dreams. Hypothetical stories like this are not the only way in which goals and aspirations can be gleaned from life narrative, however. Goals and aspirations – clues about who a person wants to be in the future – are also contained within stories about the past and present. Bruner gives this example:

The Self as narrator... is always, as it were, pointing to the future. When somebody says, as if summing up a childhood, 'I was a pretty rebellious kid,' it can usually be taken as a prophecy as much as a summary. (Bruner 1990, p. 121)

Bruner maintains that whenever we think back, and select events from our past, to construct our life stories, we are simultaneously shaping ourselves for our imagined future (2003). Laszlo similarly maintains that one's life story is really an identity plan, communicating ones wishes, goals, and aspirations (2014). Inferring goals and aspirations from a person's life narrative is not, therefore, an analytical exercise limited to those portions of the narrative that *explicitly* deal with the future. Clues about aspirations – who we feel we could become – can be found in stories of the past and present. Interestingly, this means that, despite our ability to continually reconstruct our identities throughout our lives, and from one context to the next, we can also become constrained by our life stories, becoming trapped within our stories and so setting up limits to our possibilities for the future, as we *become* the stories that we adhere to in our daily lives (Bruner 2004). It is thus an interesting and paradoxical feature of narrative identity that we both control it, and it controls us.

Personal Narratives in the Context of Public Narratives

Then there is the importance of the social context. Somers (1994) has highlighted two important elements to studying narrative identity, the personal narrative, and its social context. She is not alone in this; most narrative scholars recognize the importance of social context in the study of personal stories (Bruner 2004; Hammack 2008; Laszlo

2014; McAdams 2001; Phoenix 2013). Central to the social context are *public narratives*, “those narratives attached to cultural and institutional formations larger than the single individual” (Somers 1994, p. 619). Examples of public narratives include: “American social mobility,” “the freeborn Englishman,” and “the working-class hero” (Somers 1994, p. 619). Different scholars call public narratives by different names. Some call them *canonical narratives* (Bruner 1986), some call them *cultural narratives* (Crossley 2000; Squire et al. 2013), some call them *meta-narratives* (Andrews 2007; Plummer 2007), and some use terms like *public narrative*, *social narrative*, and *cultural narrative* interchangeably (Somers 1994). The point of commonality, however, across all terms, is that they refer to stories which are not unique to individuals.

Public Narratives, Aspirations, and Possible Roles

Despite using different terminology, these scholars of narrative identity express a common idea: that public narratives form the backdrop for life stories. Moreover, because, as we have already seen, life stories are intimately linked to personal aspirations, public narratives form the backdrop for personal aspirations as well. This is unsurprising, because such narratives often provide models of the intentions, goals, and values typical to people in a given culture. The narratives thus provide templates of how to live one's life (Mankowski and Rappaport 1995). Just as individuals have repertoires of *possible selves*, including selves they *do*, and *do not*, want to become (Markus and Nurius 1986), so too do the larger stories of a culture contain a repertoire of *possible roles*, with indications about which are desirable and which are undesirable:

Stories define the range of canonical characters, the settings in which they operate, the actions that are permissible and comprehensible. And thereby they provide, so to speak, a map of possible roles and of possible worlds in which action, thought and self-definition are permissible (or desirable). (Bruner 1986, p. 66)

Public Narratives As the Aggregate of Many Stories

Since public narratives outline *possible roles*, they are often referred to by the *names* of those roles. As we have seen, Somers' examples of public narratives include: "the freeborn Englishman" and "the working-class hero" (1994, p. 619), while Rappaport's examples of dominant cultural narrative include "welfare mother, college student, [and] housing project resident" (2000, p. 4). Rappaport explains that such roles often become shorthand for the stories that lie behind them.

Expressing public narratives, however, can be challenging. Sometimes scholars express them *as stories*. For example, Hammack writes the narrative of Israel as a story, which begins: "In 1948, a nation emerged from the ashes of the Holocaust. The sandy shores, fertile soil, and mountainous beauty of their original homeland once again welcomed them. . ." (Hammack 2008, p. 222). Most of the time, however, scholars describe elements of the public narratives, such as *who* and *what* the stories are about, and what *point* they make. For example, Phoenix describes, "*it is worth standing up for your convictions*," as a narrative, and, "*racism is illegitimate and to be opposed*," as a narrative, even though these are clearly points that narratives could make (Phoenix 2013, p. 1971).

One of the reasons why it is difficult to express public narratives as narratives may be the absence of authoritative texts. Unless scholars have an authoritative text, such as the Bible (see Tribble 1984) or "The Big Book," which is the primary text of Alcoholic Anonymous (see Humphreys 2000), or a specific narrative in the media, there is usually no formal version of a public narrative that can be referenced.

In a sense, a public narrative is actually an *aggregate* of all the stories that get told about a certain kind person or event, or that make a certain point. These stories may have a common structure, but public narratives are generally *more* than basic plots (Booker, 2004), archetypes (Frye, 1957), or genres (Bruner, 1986). There is content to them that makes them at least *somewhat* historically and contextually specific. A good example is Salzer's study of what he calls the "societal-

level narratives" of housing project residents (1998). By asking 100 people who did not live in housing projects to write a short story about a housing project resident named Ann, and by analyzing the stories thematically, Salzer was able to construct a standard example of the public narrative about housing project residents:

Ann . . . always dreamed about getting out of public housing. She has lived in public housing all her life. . . [The place where she lives] is poorly maintained and crime-ridden. While in high school, Ann met a nice guy and thought she was in love. She got pregnant by him and dropped out of high school. This guy left her after the child was born. Ann got pregnant again and had a second child. Ann wanted to go to college, but can't because she lacks the funds to pay for it. Ann has a hard time finding work because of her lack of education and day care resources for her children. She is able to find work at a fast food restaurant. There is a lot of death in Ann's life. Ann is depressed. She will never make it out... (Salzer 1998).

As Salzer explains, this narrative was not related by a single individual; it was his attempt to aggregate the accounts of many individuals, and he presented it with the caveat that no single story could accurately capture all possible combinations. Thus, when we talk about *public narratives*, we must recognize that, except in rare cases, no single telling of them will fully encapsulate all of the variants that can be told. This does not mean that public narratives are not narratives, but it does mean that they are sometimes described non-narratively, with reference to their characters, themes, or morals.

Public Narratives As Normative

A key thing to realize about public narratives is that they are often normative. They explain how one ought to live one's life in a given culture, illuminating what an ordinary life looks like (Bruner 1990; Phoenix 2013). They elucidate for us good and bad ways of being. Crossley, summarizing Taylor (1989) explains:

One of our basic aspirations is the need to feel connected with what we see as 'good' or of crucial importance to us and our community. We have certain fundamental values which lead us to basic

questions such as ‘what kind of life is worth living?’... A vision of ‘the good’ becomes available for people in any given culture... Stories have a tremendous force in this process insofar as they have the capacity to confer meaning and substance on people’s lives, to subtly influence their progression and orientation towards a particular ‘good’. (Crossley 2000, p. 16)

That is not to say that public narratives in a given culture all present *the same* vision of good. According to Bruner, cultures are made up of connecting stories, which do not necessarily represent consensus (1990). Rappaport, for example, highlights the lack of consensus in two public narratives of people with mental ill health in the United States. In one narrative, typically advocated by mental health professionals, the good life is taken to be one in which a person with mental illness is able to live an independent life (2000). An alternative narrative, advocated by community-based mental health organizations, cherishes communal living, maintaining that the good life for a person with mental illness is one in which he or she is part of a caring community. This shows how public narratives, even those about the same kinds of people, can be in tension with one another.

Such tensions are important, because stories in tension can offer competing visions of what to *do*. Should a mentally ill person live alone, or in a group setting? Narrative ultimately matters because it impels us to *act*. As Somers puts it:

Research is showing us that stories guide action... that people are guided to act in certain ways, and not others, on the basis of the projections, expectations, and memories derived from a multiplicity but ultimately limited repertoire of available social, public, and cultural narratives. (Somers 1994, p. 614)

This is, ultimately, why public narratives matter. Public narratives can affect which individual actions are possible (Hammack 2008).

The Dynamic Interplay of Personal and Public Narratives

Public narratives are not fixed, however, and Squire and colleagues have highlighted that,

among narrative scholars, there is a debate about whether we *use* public narratives to construct ourselves, or whether *they construct us* (Squire et al. 2013). Sometimes narrative scholars choose to stress how we are *constrained* by public narratives (Phoenix 2013; Somers 1994). At other times scholars stress people’s *agency*, and the ways in which they use narratives as *resources* in the process of identity construction (Bruner 2004; Crossley 2000; Hammack 2008). Mankowski and Rappaport, for example, discuss how people appropriate public narratives into their own stories to construct, maintain, or change identities (1995).

Narrative scholars usually recognize that there is a dynamic interplay between personal and public narratives. In particular, that we both *use and* are shaped by public narratives (Bruner, 2003; Crossley, 2000; Markus & Nurius, 1986; McAdams, 2001; Rappaport, 2000; Somers, 1994). McAdams talks about life stories being co-authored by the individual and his or her cultural context (2001). Markus and Nurius make the same point about identity:

An individual is free to create any variety of possible selves, yet the pool of possible selves derives from the... individual’s particular sociocultural and historical context and from the models, images, and symbols provided by the media and by the individual’s immediate social experiences. (Markus and Nurius 1986, p. 954)

Personal identity narratives, then, are negotiated within a wider symbolic field, which provides symbolic *resources* for the construction of personal narratives. Public narrative resources form part of the “symbolic context” of societies: “the meanings, ideologies and worldviews circulating in particular social settings, through which people understand themselves, others and the activities they engage in... [and which frame] how different groups are valued and respected” (Campbell and Cornish 2010, p. 848).

It is important to recognize the fluid and constantly negotiated nature of these symbolic resources, because when enough people reconstitute their personal identities, these can reconfigure public narratives (Andrews 2007; Hammack 2008; Mankowski and Rappaport 1995). As Hammack explains, “personal narratives can disrupt dominant

discourses in a society, thereby destabilizing master narratives of identity” (Hammack 2008, p. 237). Individual narratives, therefore, can expand what is possible for everyone in a society. Herein lies the possibility for social change.

Cross-References

► Social Change

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Norms

Martina Cabra

Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

Abstract

Norms can be defined as sets of relations that define forms of communicating, feeling, acting, and thinking. They define what is allowed and what is not allowed to be said, felt, done, or thought. They are situational and relationally negotiated. Usually described in terms of their functions (descriptive, constitutive, prescriptive), the term commonly designates prescriptive guides. Norms can be more or less explicit, more or less prescriptive, and be more or less opposed and resisted. Authors mostly agree on the fundamental character of norms for human life. Operating at a collective and a psychological level, they guide and constrain human lives. And although sometimes viewed as limiting possibilities rather than creating them, they can be seen as producing a certain set of possibilities and transformed through our engagement with them in our relations to others.

Keywords

Social norms · Psychological norms · Development

Introduction

Human lives are filled with social and personal expectations, rules, and prescriptions. Our deepest wishes, desires and anxieties are marked by social, cultural, and relational norms. We are scared to wish for someone's company, do not dare to dream of a certain trip or get excited when imagining a radical change in our lives that we will never do. What we do is perceived, judged, and evaluated by others. A 4-year-old flying a kite, a woman speaking in public at the municipal council or a group of teenagers

drinking in church can be sanctioned, frowned upon, or applauded. Judgments and evaluations based on socially shared norms leave traces in people's lives; they mark us in more or less lasting ways. Yet, the way in which norms mark us is not determining: a young kid can drop out of medical school and form a punk band and an unhappy worker can stay at his job while secretly plan a revenge from his boss. From absolute rejection to strict compliance, people are not just evaluated or perceived, and they also find all sorts of ways to deal with these norms. Norms organize our social lives and define us, but we also have a part in defining them. They are shared and socially defined, but also psychologically reconstructed and internalized. People breach this gap in different ways and change what is expected, what is normal, or what is mandatory, moving the boundaries of the possible making thinkable the unthinkable.

In the literature on norms, there are many terms that resonate with the notion of norms: laws, rules, orders, customs, and prescriptions can be considered as referring to a similar phenomenon. Different disciplines have in their own way defined the terms more or less empirically, and more or less conceptually. To address the phenomenon which is of interest here, I define in the broadest possible terms as "that which is allowed and not allowed," in what follows, I adopt a psychological sociocultural perspective and organize the different notions around this phenomenon. I first present the anthropological definition of laws, rules, and norms and build on it to provide a disambiguation of the terms. I then review the classifications of norms that have been proposed. Thirdly, I look at the approaches interested in norm construction. I finally argue that what the studies on norms have in common is the recognition of a twofold existence, operating at a social and at a psychological level. Sociocultural psychology as a discipline is precisely concerned with the mutual constitution of the social and the psychological, and I thus propose, within this approach, to complement the definition, classification, and construction of norms in understanding their relation to the possible.

Laws, Rules, and Norms

Anthropologists' encounters with foreign societies, where people acted very differently from what was known and expected, inaugurated a body of research that studied the characteristics of what they called "primitive" people and societies. Particularly, these differences raised the question of whether there was chaos or some type of order in how they functioned. Studies conducted by scholars such as Malinowski, Steinmetz, Durkheim, among many others, came to the conclusion that there were indeed forces creating "order, uniformity and cohesion in a savage tribe" (Malinowski 1926, p. 19) and they defined them in terms of laws, rules, and norms.

Malinowski (1926), a central figure to understand norms in anthropology, explained that the laws and traditions that regulate all human life emerge from the "biological, mental and social needs of human nature" (Malinowski 1926, p. 20). With this claim, he enunciated the fundamental character of laws in human lives – in any society. Laws are here universal and founding of the group's existence. Another prominent figure in the study of norms in anthropology is Claude Levi-Strauss, who equally defined laws through their universality and founding character. He stated that "the absence of rules is a clear criteria to establish the distinction between natural and cultural processes" (Levi-Strauss 1949, p. 12). In his understanding, laws, as they are universal, pertain to natural processes, while rules and norms to cultural ones. Based on this distinction and in a language play, he termed the prohibition of incest, law of incest, as he considers it the only human norm that has the characteristics of the natural processes, sharing its universality and founding the distinction between the natural and the cultural.

Malinowski (1926) further distinguished types of rules, based on the motives that back them up. There are rules that are followed because their practical utility has been confirmed by reason and experience. Others are followed because if the person were to move away from them they would feel shame and embarrassment. There are still others, such as those regulating games that are

followed because if they are not followed "the game" would be ruined. What he stated is that, in this type of rules, there are no "mental forces" or "personal interests" that could contradict them and make following them a heavy load. It is for him as easy to follow as to not follow these kinds of rules. Differently, there are other rules that are sacred and important. These are backed up by strong convictions and the possibility of supernatural sanctions that would be imparted if not followed. Different still are customs, which are norms that are implicit in everyday life activities and actions. This classification allows him to state that, aside from the law that regulates the functioning of a society, there are other types of norms and traditional mandates that are backed up by motives and forces that are mainly psychological. He thus frames rules and laws as defined categories of the body of customs and social rules (Malinowski 1926).

Both Malinowski (1926) and Levi-Strauss (1949) were interested in understanding how order is produced in societies. Similarly, as we will see, psychoanalysts such as Sigmund Freud and Jacques Lacan attempted a similar effort in understanding what organizes psychism. Their work on laws can be considered the corollary attempt to understand such universality in psychism. In both cases, scholars defined a constitutive function of norms in human lives (in societies or psychism) by proposing their universal character (although varied content) for defining how norms appear in each situation.

To address the phenomenon which is of interest here, that which is allowed and not allowed, in what follows, I maintain the term law for universal norms; rules for explicit norms; customs for implicit norms; and norms in themselves as relations defining forms of communicating, acting, and thinking, situational and relationally negotiated.

Classification

Across these terms, there have been attempts to classify norms depending on their function and their level of analysis (see Table 1).

Norms, Table 1 Perspectives on norms

		Function		
		Prescriptive, regulatory, injunctive	Descriptive, technical	Constitutive, determining Institutional
Level of analysis	Social Collective Group	i.e., “people must cross the street when the light is green”	i.e., “if you want to turn on the TV, press the left button”	i.e., prohibition of incest
		von Wright, Searle, Winther-Lindqvist, Moscovici, Jodelet, Malinowski, Cialdini et al.	von Wright, Cialdini et al.	von Wright, Searle, Levi-Strauss, Butler, Malinowski
	Individual Psychological Perceived Personal	i.e., “girls cannot play cowboys”		i.e., threat of castration
		Piaget, Tomassello, Vygotsky, Harris, Winther-Lindqvist		Searle, Levi-Strauss, Freud, Lacan, Butler

When it comes to defining the function of norms, there is one main distinction that authors have made: there are prescriptive, directive or regulatory norms (Nino 2013; Searle 1997; von Wright 1963), descriptive or technical norms, and constitutive or defining norms (Searle 1997; von Wright 1963). The first and second ones organize or describe an already existing set of things, while the third defines what is considered reality, they are norms that found the very objects to which they refer. Although referring broadly to the same type of statements, the authors chose different names for them depending on the aspect of the norm they want to foreground. For example, some choose to call a norm injunctive rather than prescriptive, allowing to include also the proscriptive effect of prescriptions (Cialdini et al. 1991). To prescribe is to define which way something ought or should be done, but with no explicit reference to what is not possible or not allowed. The word injunctive carries both the prescriptive and proscriptive aspects of guidance. If we consider the case of a child being told “you must learn to use the toilet now,” the action of using the toilet is prescribed, but that of not using diapers anymore is proscribed. Calling the norm injunctive allows pointing to impossibilities as well as possibilities but, as mentioned, the terms are chosen by the authors depending on the aspects of norms they wish to foreground.

Constitutive norms create the act they enunciate, giving it a new status or function (“X

functions as A in B”). As when a white flag was decided to be symbol for truce, they transform the stick and the piece of cloth into a new object, indicating actions to those involved (stop fighting, drop your weapons). Technical norms, quite differently, are more descriptive. They do not seek to guide conduct in a certain direction but state a hypothetical situation, such as “if you wish to turn on the TV, you must press the left button.” These describe an already defined state of things and enunciate a possible course of action. Last, prescriptive norms are those, in which the speaker tries to direct the others’ behavior, inducing him to adopt a certain course of action – such as “children must brush their teeth before bed.” It may be interesting to consider that norms, which are considered constitutive at a certain point in time, may become prescriptive at another and, thus, possibly changed or contested. A group or individual might consider a norm in one or another category, as has been the case of gender differences once thought of as “natural,” increasingly revealed as socially constructed and thus possible of change.

In terms of their level of analysis, norms can be individual or social, although there is no agreement in the terminology employed – personal (Cialdini et al. 1991), perceived (Chung and Rimal 2016), individual (McKirnan 1980), or subjective (Kelsen 2003); as per the social, authors refer to collective (Chung and Rimal 2016), societal (McKirnan 1980; Sherif 1936), or de-psychologized (Kelsen 2003) norms.

Across these propositions, norms have then been distinguished in terms of their function (constitutive or regulatory) and defined as statements (explicit or not) guiding or prescribing conduct in a certain direction. The authors' claims can be interpreted as proposing that, as some of the norms are constitutive, they are creating a certain field of possibilities; while the others merely provide order to such constituted states.

Norm Construction

I will now consider the approaches not interested in defining or classifying norms, but in their construction and development. Social, cultural, and developmental psychology, as well as psychoanalysis, provide different contributions to understanding such processes.

Norms as Frames of Reference

Sherif's (1936) pioneer work on the psychology of social norms was one of the first attempts to study norms at a psychological level. He showed, in an experimental setting, that there are frames of reference from which we interpret a task or understand a situation that are socially constructed. These frames are for him defined by social norms that can be contextually available or individually created. In the presence of an ambiguous stimulus, such as a moving dot of white light in a dark room, the person will either use situational queues to make sense of why it moves, or create relations with prior experiences to interpret it. What Sherif's experiments showed is that "if no norm exists in an uncertain and ambiguous situation, then individuals generate one such that their judgments do have a reference point" (Abrams and Levine 2012, p. 55). These norms can be "values, customs, stereotypes and conventions" (Sherif 1936, p. 6), among others, and can change for example, if a person is alone or within a group. For him what is commonly understood in psychology, as "variation in culture" is merely a variation of a frame of reference, made of social norms, relationally and situationally constructed.

Other social psychologists who studied norms, such as Asch (1951) and Milgram (1963), were interested in when and where certain norms or rules were followed, ignored, or transgressed; however, Sherif asked the more fundamental question of how norms were constructed. It is the presence of others, the presence or absence of elements in the situation that could be linked to the perceived phenomenon that participate to the creation of norms and to the frames of reference that are used to interpret the situation.

Normalisation in Groups

Serge Moscovici (1974) termed "normalization" the process through which norms are constructed at a group level. The definition of this process echoes Sherif's (1936) idea that in small groups, norms and frames of references become established through convergence of the members' view toward consensus. Yet, normalization here does not designate the person's conformity to norm as Sherif considered, but conformity to pressure toward group uniformity (Cohen 1978; Moscovici 1974). Moscovici and Faucheux (1972) label normalization and conformity, two processes that can be alternative styles of dealing with norms. As Cohen (1978) puts it:

Normalization contributes to the operation of group norms because pressures toward uniformity lead to the crystallization of norms in the first place (...) norm formation is itself a type of conformity, then the overall conformity process has two parts: (1) the development of norms through pressures toward uniformity, and (2) the operation of established norms. (Cohen 1978, p. 443)

Group norms can then operate both as frames of reference structuring people's interpretations of situations and as rules or ideals governing what members ought to and are expected to do and think.

Psychic Roots of Social Norms

Other studies on the construction of rules and prohibitions in societies refer to the fact that groups build shared prohibited actions, topics, or themes through practices and collective discourses, and

that some of these remain unspoken or undone because of their psychological roots.

For instance, Denise Jodelet (1989) studied how a community dealt with “madness,” notably by creating a social separation between the “madman” and the “sane.” She identified that to accomplish this separation there were institutionalizing and signifying practices. The first ones defined prohibitions around the mad persons – for instance, it was not possible to mix the laundry of the “mad” and the “sane.” The second support prohibitions through different representations – the mix is not allowed because there was a risk of pollution as the “mad” person is “dirty.” Between these two types of practices, Jodelet (1989) argued there was “something private.” This “something private” was, for her, related to villagers’ experience of the threat of the loss of individuality. There was a real fact – the encountering of other people, and differences with them. But villagers spoke of contagion, of the impurity of the other’s body, of a kind of pollution through contact that evoked, she claimed, the sexual, bodily, phantasmatic aspect of fusion of bodies, or the loss of individuality at a more profound level. In other words, she made the hypothesis that there is a defensive psychic root of this institutional instauration of a social difference.

Psychoanalysis, while exploring the unconscious (Roudinesco 2007) also defined the psychic roots of norms. Freud (1923) proposed there is a psychic instance, named the Superego, which is the moral instance of the psyche. The Superego is considered the place from where feelings of guilt emerge; it establishes how the subject should behave, think, and feel (Freud 1923). From a genetic perspective, this instance is the result of the abandonment of the real-life investment of the parental figures. This abandonment is actually an internalization of these figures, and the emergence, psychologically, of an instance that substitutes their function. Freud claims that the very intense feelings toward the parental figures young children display are abandoned because of the dangers they could bring – it is expected that the child diversifies his objects of affection and

substitutes the sole love for parents by other members of the group. Such an abandonment is, from this perspective, founding for the psychological organization itself.

If we take the terminology defined before, the impossibility to have sexual relations or erotic feelings toward the parental figures can be considered a law, a constitutive or institutional rule, as it found the way in which psychism is organized.

In the Lacanian return to Freud, the ways in which such a conflict – between the drive directed at the parental figures, and the prohibition of such relation – is resolved by defining a universal relation of the subject to the law. In each situation, this resolution defines a specific way of dealing with rules and constructing norms. The possible solutions are repression, renegation, and forclusion (Lacan 1958). For instance, the repression of the so-called law of the father, that is, the impossibility to marry one’s mother, leads to all sorts of neurotic solutions. In obsessive neuroses, people transform desires and wishes into imperative demands; while in hysteria, they escape and avoid all imperatives, turning situations in which the person has to comply to certain rules into an occasion of escape or disrupt the state of things (Lacan 1956). The “renegation” of the law in perversions has clinical consequences of persistent violation of rules, whether littering in public or flashing people on the street. The more complicated relation to such a law is the one that appears in psychosis, in which the law is forcluded, meaning it never had an inscription. Here, there was never a constitution of an internal regulatory instance also is in charge of an analysis of reality (Freud 1923, 2001), and therefore, norms and rules can emerge from internal drives, undistinguished from external demands, as the way in which the whole world is experienced has been defined differently.

In all, psychoanalysis has contributed to understanding how constitutive or founding a law can be for psychism. But while it shows where laws and our relations to norms come from, the rigidity of claiming the solutions are universal does not take into account the people’s life course or the contexts that change and in which people develop.

While there might be “styles” or abstracted forms of dealing with norms, specific social situations change and how we view the world also changes, making it difficult to speak of universality. Social situations, demands, and expectations vary, and these general styles, as they come from an internalization of social materials, might also change.

The Development of Rules and Norms

In developmental psychology, some scholars have tried to understand not the social construction of norms or their psychological roots, but their emergence and development in people’s lives across time.

Piaget’s was concerned with the construction of rules in children’s games (Piaget 1932). For Piaget, the child will accept a new rule in a game because he thinks that he has discovered a pre-existing rule – a rule pertaining to the established world of rules by the “Word of the Adult” (1932, p. 45). The child’s encounter with a new situation necessarily carries the weight of interpretation from his or her whole “moral life” (Piaget 1932). This means that whenever encountering a new object, game, or situation, this experience is made on the basis of the fact that the world is “morally” organized: that there are some things which we can and cannot do, some things which are right and wrong, in one word, the world is normative (Valsiner 2018). There is an initial identification of what is (the real) and what must be (the normative) (Piaget 1981).

More generally, Piagetian and post-Piagetian approaches analyzed the role of conflict for norm construction or change (Zapiti and Psaltis 2012). These authors show how multiply operating norms can enter into contradictions. A little girl might usually play under the norm that “knights are characters for boys” but when playing knights against monsters, she might consider not abiding by that norm in order to avoid being the monster as “the ugly character” or “on the losing side.” This might be a way in which flexibility in our relations to the norms is introduced.

From the sociocultural perspective, Lev Vygotsky (2016) was also concerned with norms, and he considered them behavioral

rules, which he calls “don’ts.” These can be social (interdictions), physical (things which go against physical rules, like lighting a match a second time), and biological (the fact that we cannot touch fire because we will get burnt). He argued that these diverse “don’ts” eventually combine in a single “situational don’t,” which can be understood as a barrier blocking the emergence of a specific action within that situation. Thus, when a child pretends to fly on a broom with a stick, there is a temporary suspension of a physical “don’t” – the child is not “actually” flying – but a social “don’t” marks the stick is not a horse but a broom as the child could equally be playing with a broom to ride a horse or a magic broom.

Winther-Lindqvist (2009) presents these authors’ approaches as considering rules as either prescriptive or sociocultural practices. For Piaget (1932), rules would be prescriptive regulations, whereas for Vygotsky, they are defined as sociocultural practices, indicating that “all social life and human interactions are governed by implicit social rules” (Winther-Lindqvist 2009, p. 22). This distinction does not appear to be mutually excluding, as norms can be socioculturally defined as well as function as prescriptive. I will now consider this sociocultural definition.

The Social and the Psychological

If we consider norms are sociocultural and psychologically defined, I propose to review and adopt the sociocultural perspective for their understanding. Guided mainly by a processual interest to understand change, this approach allows looking at the dynamics of passage from the social to the psychological level at which norms operate, and vice versa.

As a discipline, cultural and sociocultural psychology is concerned with studying human development as a social and cultural process (Cole 1996; Valsiner 1997, 2000, 2019b). One of its core premises is that this takes place through social guidance (Valsiner 1997, 2014; Zittoun et al. 2013). Children learn to manipulate a spoon and avoid plugs, parents come to

know how to speak to teachers and teenagers starting university discover how to write formal letters. These paths or ways of doing can be more or less imperative: a child can never touch a plug but a teenager can decide to provocatively write an informal essay to make a point. This process of social guidance has a fundamentally normative character (Valsiner 2018) and the normative weight of each action is defined within the situation and between the people involved.

Jaen Valsiner (2019b) claims that it is only by looking at how they are constructed, by people, in relation to other people and in a shared environment that we can understand why norms are fundamental for the functioning of any social group or collective. In this approach, norms are considered “cultural tools – made possible by sign mediation – that mediate the personal and collective movement towards the immediate future” (Valsiner 2018, p. 10). He further claims that all human psychological phenomena are normative (Valsiner 2018). It is considered to be what sets human systems apart from others and that “the normativity of the psyche is the developmental result of the interiorization processes from the materials available in the social environment – but not reducible to the latter” (Valsiner 2018, p. 9). Thus, from social normativity, the psychological normativity comes from internalizing, through the available material, a certain way of establishing relations between things – “when I see the sun comes up, I must wake up,” relating my looking at the sun, to getting out of bed.

Normative systems, at a social level, such as how one is expected to behave at work or brush one’s teeth, are considered to be socially crystalized (Zittoun et al. 2003) in everyday-life arrangements. The ways in which desks are set in an office and the types of objects that can be found – pens and paper, clips, computers, while no drinking glasses, party dresses or costumes – provide guidance of what things are or are not possible in each setting.

Formally, such social guidance is understood as made of semiotic constraints. Drawing on

Lewin’s (1936) model of fields of possible movement, Valsiner defines constraints as what creates partitions in a field of otherwise indeterminate possibilities (Valsiner 1998, p. 50). In that sense, norms are derived from constraints creating the “bounded indeterminacy” of developmental processes: they create directions for development, which are not imposed, but orient the infinity of possible forms. Norms are then generalizations from the repeated encounters with such constraints and can be defined as emerging configurations or sets of relations.

But norms are not simply there: they are constructed through experience. By playing, children test their limits, explore their boundaries and appropriate them depending on their consequences. Through imagination, adults engage with their transgression, their enforcement in an unfair situation or their transformation to avoid a social catastrophe. More so, through thinking, arguing, discussing, people give form and transform statements and scenarios. We can engage with a foreign world while sitting in a small windowless apartment and then feel better about our confinement, or yet decide to breach it and leave. These are processes that can explain how they change and emerge both at a social and a psychological level – and they have been a central part of sociocultural psychological research (Valsiner 2019a).

Norms and the Possible

Across the perspectives revised, I tried to show that authors always distinguish between a social and a psychological level at which norms function. Secondly, the focus on different questions in the authors’ propositions can be read as giving rise to static or dynamic depictions of how norms emerge and define what is possible. The definitions and classifications provided in anthropology (Levi-Strauss 1949; Malinowski 1926), philosophy, legal studies (Kelsen 2003; Nino 2013; Searle 1997) and social psychological research (Cialdini et al. 1991) specify which

kinds of norms exist but open up the question of their change and emergence. Social, cultural, and developmental psychologies (Valsiner 1997, 1998; Zittoun et al. 2013) as well psychoanalysis (Freud 1923; Lacan 1956, 1958) start from a processual outlook asking first about the psychological processes that allow their construction. Yet, for some of these authors, the possible appears to be defined by the law and the norms. They also determine what is impossible, what is thus sanctioned, leading to a rigid understanding of possibilities that do not appear to be open for change.

From a sociocultural perspective, we can articulate the twofold existence of norms and the processes that allow their construction. Socially, norms guide our behavior; psychologically, they form the way in which we think, feel, and speak. They become the points of reference from which we experience our lives and shape our future. But if the sociocultural norm merely guides what is psychologically reconstructed, and in specific situations, then there appears to be a large margin of freedom in our relations to them. The possible can be played with and imagined: children alter and change norms in imagined scenarios to push the limits of the possible; adults fantasize and imagine plays on norms; forms of social participation such as direct democracy allow people to create initiatives that question the norms underlying the laws, and proposing new ones – such as the instauration of women's right to vote. These engagements both define and redefine what is possible, moving and transforming its boundaries.

Every time a norm is constructed, reality is actualized in a certain way, and possibilities reorganize. What we consider allowed also defines fields of possibilities. We can engage with such possibilities, either without realizing them or by changing the current state of things. We can explore the possible, alone and with others, and this exploration might show us some possible paths, further changing current conditions, and might lead to also generalizing new norms, in an intertwined spiral of norms and possibilities.

Cross-References

- [Daydreaming](#)
- [Emergence](#)
- [Imagination](#)
- [Play](#)

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Novelty

Maria Regina Brioschi

Department of Philosophy, University of Milan, Milan, Italy

Abstract

Novelty, defined as the quality of being new, has always been associated with a vast range of phenomena which had never existed before. The concept is of particular relevance especially in the fields of science, technology, and art, because they mutually deal with **discovery**, **innovation**, and **invention**. As it is apparent, the three disciplines mutually share the importance of creative processes, which lie at their very core. For this reason, the main investigations on novelty, both theoretical and empirical, from the twentieth century onward have mainly been carried out by philosophical and psychological studies related to creativity. Novelty indeed represents one of the fundamental criteria of **creativity**. Accordingly, this entry (1) begins with a general, phenomenological description of novelty, (2) points out the current relevance of novelty, (3) focuses on its history by providing a theoretical framework for its understanding, (4) explores different empirical researches and cognitive models of novelty elaborated hitherto, and (5) illustrates the fundamental relation between novelty and the possible.

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Keywords

Novelty · Originality · Irreducibility ·
Potentiality · Process · Emergence · Creativity

Phenomenology of Novelty

In mundane experience, novelty is apparently a very common and widespread phenomenon, emerging at multiple levels of personal and social life. There are many examples of it, insofar as people frequently choose the adjective “new” to denote happenings, things, ideas, or whatever they were not acquainted with before: “a new book!,” “a new house!,” “a new pair of shoes!,” “a new job!,” “a new blossom!,” “a new baby!,” but also “a new hypothesis!,” “a new masterpiece!,” and so forth. In each case, “new” means that the object under observation is *unprecedented*, and this character is valid both for “natural” products, such as plants, animals, and so forth, and for “cultural” products, that is, what results from deliberative acts to impress a new form onto some previous material, such as manufacturing products, buildings, and so on. Among cultural products, new ideas are harder to define, because it is more difficult to establish to what extent the contents included in new ideas are old or genuinely new. In these cases “new” does not merely indicate something *unprecedented*, nor something *unusual*, but also something *original*.

The term **originality**, used as a quasi-synonym, reveals that novelty, together with its proper difference and rupture from the past, at the same time requires a point of comparison, a reference, or a certain **perspective** and a consequent appropriateness. To sum up, for a novelty to be such, it must always be *relevant* in some respect and for someone. For instance, in the cases of “a *new (original)* model for explaining something,” or of “a *new (original)* strategy for solving a problem,” it is implicit that the model/strategy is not only never stated before but is especially relevant for someone in achieving a definite goal. Stated otherwise, a certain discovery makes a new finding emerge, but the only way to designate that

finding as “new” is to make a comparison with other findings. This may be called the *relative* or *perspectival* character of novelty. It is often overlooked but can be found in all novelties.

The paradoxical nature of novelty lies exactly at these two antithetical points: that it is *unique* and *unprecedented* and at once *relative* and *perspectival*. Every novelty represents a discontinuity in a continuity, and for this paradoxical structure, empirical research on novelty is still exiguous. Finally, as the examples have already demonstrated, novelty is usually conceived as a *result of a process* or multiple processes, but irreducible to them, no matter whether they are natural, social, or cognitive.

Current Multidisciplinary Relevance

At the level of scientific research, novelty is viewed as a pivotal or prominent element in at least three fields. (1) Above all, novelty is related to the field of aesthetics, art, and, more recently, “creativity studies,” because it is regarded as an intrinsic characteristic of *creativity*, which artworks carry within themselves. As Gilles Deleuze sharply notes, “novelty is the sole criterion of any work of art. If you don’t feel you have seen something new, or have something new to say, why write, why paint, why shoot a film?” (Deleuze 2006, p. 217). Even more radically, **Ernst Bloch** underlines the profound relationship of works of **genius** and novelty, emphasizing how every great work of art “still remains [. . .] impelled towards the latency of the other side, i.e., towards the contents of a future which had not yet appeared in its own time” (Bloch 1995, 1, p. 127). Furthermore, the importance of novelty in art and its role in **creativity** has been accentuated since the 1960s by the continuous growth of advertising and media, which enlarge the boundaries of creativity and enrich its studies, especially in the fields of psychology, cognitive science, and neuroscience.

(2) Secondly, novelty is associated with technology and science, and more specifically with scientific progress. From the very beginning, scientific **inventions** have marked the appearance of mankind on Earth (cf. Plessner 2019),

determining as indissoluble the evolution of humanity and technology. To see how they both develop together through time, it is sufficient to consider that the distinction between Paleolithic and Neolithic human beings is based on their different technological **inventions**.

More broadly, all of the history of **science** illustrates the power of novelty under the guise of discovery. Something new is detectable in every single discovery in the history of sciences, and in like manner it can be singled out in every single process of scientific research. As Thomas Kuhn underlined, novelty constitutes the core of every paradigm change, of every scientific revolution (Kuhn 1996, p. 52). Moreover, in the past two centuries, biology has probably been the most stimulating science for thinking about novelty, especially **Evolutionary Biology** and **Epigenetics**. Overall, Charles Darwin's **evolutionary thought**, from its very beginning, has been posing a challenge to the modern (Western) mind-set, because it points out that nature is not of a fixed, immortal kind; rather it is dynamic, ever-changing, and in development (cf. Mayr 2004; Blitz 1992). Accordingly, the more physical and biological sciences improve their understanding of this dynamic and open structure of the universe, the more science theorists and philosophers must address questions like: "What categories are more adept for describing those substantially new changes that are indicated by a vast number of scientific results?"; "Can we actually speak of novelty?"; and "How is it possible for something new to appear?." The next section will show how twentieth-century philosophy has addressed those questions.

(3) Thirdly, novelty represents an issue of public interest, for ever-developing pluralistic societies, and the new challenges arising thereof (for instance, climate change or the new COVID-19 emergence), constantly require new measures, policies, and laws. The social and political constructions of the past, both at the international and national levels, continuously need modifications and innovations under the pressure of current challenges. As Giovanni Maddalena and Fernando Zalamea suggested, "Perhaps due to the period of international crisis, appeals to

creativity multiplied in any field. Sure enough, when the status quo cannot grant welfare conditions anymore, something new is needed" (Maddalena and Zalamea 2013, p. 6).

Therefore, on the one hand, the salience of novelty seems undeniable; on the other, as soon as one begins to discover how relevant it is, it becomes clear how difficult it is to capture the essence of novelty, to define it properly, and to scrutinize analytically it. It is as easy to recognize, as it is difficult to explain. For this reason, novelty can be regarded, both in everyday experience and in a vast number of disciplines, as "an indispensable concept and a serious problem" (North 2013, p. 5). Accordingly, it is first and foremost necessary to trace the history of the concept and to provide a theoretical framework within which novelty can be finally admitted and comprehended.

History and Theoretical Framework

The word "Novelty" – originating from the French *nouveauté* – is not widespread or frequently used in English. Its invention is quite recent, and the first written proof dates back no earlier than the fourteenth century. Nonetheless, the adjective is widely circulated, and, in this case, almost all Indo-European languages share the same root of *new*. Furthermore, in English, as in many other languages such as Ancient Greek, *new* and *now* come from the same root (cf. D'Angour 2011, p. 19), but this temporal association of novelty to the present will be clarified in the last section.

Beyond the specific, different, linguistic expressions of novelty, its adoption as a technical word and a theoretical concept in philosophical and scientific debates is even more recent, since it can be situated between the end of the nineteenth and the beginning of the twentieth century, and it became a topic of widespread discussion during the 1920s (cf. Brioschi 2020, pp. 175–80). As Stephen Shaviro states:

The concepts [of creativity, novelty, innovation] (or at least these words) are so familiar to us today [...] that it is difficult to grasp how

radical a rupture they mark in the history of Western thought. In fact, the valorization of change and novelty, which we so take for granted today, is itself a novelty of relatively recent origin. Philosophy from Plato to Heidegger is largely oriented toward *anamnesis* (reminiscence) and *aletheia* (unforgetting), toward origins and foundations, toward the past rather than the future. (Shaviro 2009, p. 70).

Before focusing on the very young history of novelty, it is first necessary to recognize the reasons for the absence of “novelty” in previous cultural debates before the nineteenth century. To determine them properly, a distinction must be drawn; the issue of novelty can be tackled from two different perspectives: ontological and epistemological. The first addresses questions like: “Does something new really exist?,” while the second: “Can one know something new?”

On the ontological level – and apart from Christian theology and the dogma of *creatio ex nihilo* first advocated by St. Augustine (North 2013, p. 36) – from Parmenides onward, novelty has not been explicitly considered because of the acceptance that nothing comes from nothing (*ex nihilo nihil fit*, cf. Mourelatos 1981). For being is and nothing is not. This viewpoint especially entails an idea of being and of the cosmos as fixed, static, and unchanging. Indeed, given this general framework within which traditional metaphysics arose, no question about novelty could have been posed. At most there was room for changes, conceived merely as slight and superficial modifications of antecedent configurations of things. On the whole, the stance of Western philosophy until the nineteenth century finds a concise expression in the words of the well-known motto from Ecclesiastes: “nothing new under the sun.”

On the epistemological level, in a sense the problem of novelty connotes the perennial problem of knowledge, which was formulated by Plato and is known as one of *Meno*’s paradoxes: “How can I know something that I didn’t know before?,” that is: “How can I know something new?.” Notwithstanding, novelty has been basically banished until the end of the nineteenth century. As Carl Hausman suggested with reference to creativity

(Hausman 1975, p. 2–17), the reason lies in a rationalistic conception of **knowledge** (and **reason**), such that nothing which lies outside of reason’s boundaries can be admitted. In this regard, Friedrich **Nietzsche** pointed out that “rational bias forces us to postulate unity, identity, permanence, substance, cause, materiality and being” (Nietzsche 2007, p. 19), and everything that exceeds such categories was condemned to mere appearance. As a consequence, novelty – along with difference, **change**, accidents, becoming, and so forth – was repudiated and confined to the margins of philosophy (**Derrida** 1986).

The main factor that determined the huge shift in mind-set at the end of the nineteenth century is represented by Darwin’s evolutionary theses, which confer a new *status* to novelty and the possible. Since then, in fact, the natural world could no longer be explained as a set of static, immutable, eternal essences, and with those categories could neither be understood truth (Mayr 2004, p. 26–27). Some philosophers took up the **challenge** posed by Darwin by trying to provide a new theoretical framework, according to which knowledge and reality could be seen in light of the inalienable relevance of novelty, **change**, possibility, and creativity. This evolutionary stance was expressed at its best by Classical **American Pragmatism** (**Charles S. Peirce**, William James, John Dewey, and **George H. Mead**), **Alfred N. Whitehead**, Ferdinand C.S. Schiller, British **Emergentism** (Conwy L. Morgan, Samuel Alexander, Charlie D. Broad) in England, and especially **Henri Bergson** in France. In his masterpiece *Creative Evolution* (1907), **Bergson** was indeed the first who drew attention to novelty and posed it as a genuine, unavoidable, and essential problem of philosophy, both for ontology and knowledge (cf. Schiller 1921–22).

Since *Creative Evolution*, the accounts of a processual universe, within which novelty finds a place as a result of a process, although not reducible to the elements from which it derives, increased in number in natural sciences (cf. emergent evolutionary theories). **Dewey** states that novelty is the “emergence of unexpected and unpredictable combinations” (Dewey 1925, p. 281). In the human sciences, and especially in

philosophy and psychology, studies committed to creative, cognitive processes began to proliferate. These studies aimed both to find a proper logic of discovery (cf. **abduction**, Peirce 1992, 1998) and to examine the process of creativity in all its complexity, without limiting it to the solitary activity of an isolated mind, but understanding it as a multilayered phenomenon that stemmed from the dynamic interplay of the individual with others and with the environment. From the very beginning, novelty was firmly associated with creativity. **Whitehead**, for instance, defines creativity as “the principle of novelty” (Whitehead 1978, p. 21), and this connection between novelty and creativity remains of utmost importance today.

Research on Novelty

Research on novelty can be divided into two different kinds: (a) *not-creativity-related*, when the conditions and characteristics of novelty are examined *per se*, and (b) *creativity-related*, when novelty is approached as a distinctive feature of **creativity**.

- Novelty Categorization Theory (NCT) (Förster et al. 2010) is committed to predicting when people perceive events as novel and how these new events are processed, thereby relating the perception of novelty to the broadness or narrowness of the mental categories in use. The other main research, from either group (a) or (b), although admitting that novelty is a result that emerges from various processes (from the merely material or productive, to the artistic, organizational, etc.), in fact limits novelty to as a result of *cognitive processes*, namely, as **mental construct**. Within this context, one of the most systematic research projects apart from creativity studies comes from the economist Ulrich Witt, who developed a **cognitive model** for novelty and explicitly differentiated its production from the creative act (Witt 2009, p. 315). Overall, by adopting a procedural approach, Witt shows that:

The creation of new cognitive concepts (ideas, imaginings) involves two operations. One is a generative operation that produces new (re-) combinations of elements. The other is an interpretative operation by which the new (re-) combination is integrated into a newly emerging or a more general already existing concept. (Witt 2009, p. 313)

According to Witt, the generative operation, which is the **recombination** of elements in accordance to some conformity or similarity criterion, can be externalized mechanically or electronically, while the interpretative operation always needs the medium of the human mind. Furthermore, this two-folded model makes it possible on the one hand to connect the epistemic status of novelty to the inductive characters of operation and, on the other, to distinguish *ex ante* between different degrees of novelty. As a result, it is affirmed that the degree of novelty is minimal “if the generative operation is known and the interpretative operation is trivial in the sense that the meaning of all its possible outcomes is known beforehand” (p. 318) and becomes maximal when “the generative operation is not known and no constraint can be imposed on the outcome of the interpretative operation” (p. 319). This kind of *not-creativity-related* approach shares with the *creativity-related* one the basic assumption that the production of novelty, or more broadly creative process, does “not create something out of nothing; it uncovers, selects, re-shuffles, combines, synthesizes already existing facts, ideas, faculties, skills” (Koestler 1964, p. 120).

(b) In *creativity-related* studies, empirical research on novelty has seldom been carried out, although from the very pioneering studies novelty is designated as an essential requirement of creativity together with effectiveness (from Guilford 1950 onward, cf. Runco and Jaeger 2012, p. 92). First, this is generally due to the elusive and paradoxical character of novelty, which is difficult to enclose in a linear definition. In this regard, it shares to some extent the same fate of creativity, inasmuch as the definition of creativity, far from being universally stated, is continuously modified and rephrased by research advancements and the different approaches they adopt. Second, the limited numbers of studies on novelty is justified by a

fundamental problem of method. As Runco and Yoruk recently said, “novelty can make **measurement** a challenge. Most tests and measures present a task or ask a question and compare the answer to norms or expectations. This is not possible when the test is designed to measure originality or novelty” (Runco and Yoruk 2014, p. 1).

Nonetheless, in the last decades, the flourishing of psychological and neuro-cognitive studies on **divergent thinking**, and related creativity tests, has reinvigorated the attention drawn to novelty and allowed new, divergent paths of inquiries. On the one hand, the role of novelty in creativity has been clarified in more detail, and two studies demonstrated how novelty “enhanced divergent creativity, but inhibited convergent creativity” (Gillebaart et al. 2013, p. 283). On the other hand, there have been many efforts to study the **emergence** of novelty as stemming from the interaction between personal and socio-cultural dimensions, because the label “new” is assigned at the end of both a judgment process and a social comparison (cf. Glăveanu and Gillespie 2015, Burns et al. 2015, Miettinen 2006, Liu 2000). Within this horizon, for instance, the essential role of constraints in generating novelty has been highlighted and tested as a strategy to augment novelty (Stokes 2005, 2009). Finally, from a bio-psychological approach, a conceptual model of the Novelty Generation Process (NGP) has been developed. This model aims at rendering the process of novelty as a whole, by making:

clear conceptual distinctions between the seeking for novelties, followed by the finding of a novelty and transforming it into a product visible to others, and finally innovative performance, which stands for the social recognition that the producer of a novelty can receive in this world. (Schweizer 2006, p. 167)

Therefore, this model presents the generation of novelty as composed of three phases: (i) the process of **novelty-seeking**, followed by (ii) creativity, divided in turn into two processes (novelty finding and production of novelty), and (iii) finally an innovative performance that

presents a product to a determined social environment.

Novelty, the Possible, and Creativity

As the phenomenological description, the theoretical framework, and the analysis on current empirical research tacitly suggest, novelty maintains a privileged relation with the realm of the possible. On the whole, novelty represents the threshold where possibility enters into the world. Novelty actualizes possibility without exhausting it.

From a descriptive perspective, novelty is *the impossible become possible*: “the impossible” because it cannot be predicted or foreseen on the basis of previous elements and “*become possible*” because it embodies possibility, and revealing it opens future horizons that were closed up to that moment. Novelty, understood as the opening of **possibility**, emerges at two different levels: in the interplay of the individual and the environment (both natural and cultural) and in the intersection of present and future.

With regard to its peculiar temporality, novelty is indeed *the future made present*. In this sense, novelty always rests in the present dimension, as the etymology somehow adumbrates through the common root of **now** and *new* but broadens its limits by pushing them toward the future. At the same time, for the “relative” character of novelty, revealed in both phenomenological description and empirical research, novelty re-creates the past. Novelty emerges in the present but is endowed with the power of redefining the past. So not only something is evaluated as new in comparison to old things, but novelty makes it possible to see old elements as new, thereby revealing possible scenarios that were hidden before the novelty appears. This feature of novelty is easily detected in the history of science, such as when a new discovery is made, or, in daily experience, when a new happening or idea allows us to reconsider and reinterpret past events under a new light. As **Mead** states, the happening of novelty in the present always “becomes a history and a prophecy” (Mead 1932, p. 21). Because of this essential

relationship between novelty and the possible, it is easy to see that the most feasible path for cultivating novelty is to enhance creative processes, no longer understood as individual, isolated, or mental process but as issuing from the dynamic interplay of different agents and temporal dimensions. Accordingly, novelty also enlarges our understanding of the future. The future is no longer the mere continuation of the past or the mechanical development of previous elements; it cannot be merely anticipated through **imagination**. Imagination envisages future possibilities; novelty creates them.

Conclusions

The phenomenon of novelty is well-known in ordinary experience: easy to recognize, harder to define. It plays a crucial role in creativity because it represents its vital ingredient along with value. Accordingly, it is a pivotal factor in all fields where innovation and creative processes are essential, such as art, science, technology, economy, and politics. Yet, the relevance of novelty, together with a theoretical discussion of its implications, is quite recent in the history of philosophy. As a consequence of the impact on philosophy of Darwin's evolutionary theses, the relevance of novelty can be located between the end of the nineteenth and the beginning of the twentieth century. From its very beginning, novelty was defined as the outcome of a process, though irreducible to it; and it was precisely in this resistance to be absorbed by the past where its profound connection with possibility can be found. Over the past decades, research on novelty – especially in psychology – has tried to find strategies to enhance novel results as well as models which render the process of generation of novelty. Overall, these studies have mainly focused on proposing the process of novelty as a reformulation of previous elements, such as ideas or experiences, while more detailed research into novelty's relationship with the possible is still unexplored. The more this connection between novelty and possibility is investigated in the

future, the more it will be possible not to forecast novelty, but to encourage and increase its power of transformation.

Cross-References

- ▶ [Abduction](#)
- ▶ [Creativity](#)
- ▶ [Divergent Thinking](#)
- ▶ [Emergence](#)
- ▶ [Genius](#)
- ▶ [Imagination](#)
- ▶ [Invention](#)
- ▶ [Perspective](#)
- ▶ [The Possible in the Life and Work of Alfred North Whitehead](#)
- ▶ [The Possible in the Life and Work of George Herbert Mead](#)

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Old Age

Tania Zittoun

Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

Abstract

With the current demographic changes observed in most postindustrial countries around the world, long-standing representations and knowledge about “old age” need to be critically examined. In effect, old age has been either idealized, as the time for wisdom, or feared, as the period of senility. With their focus on development and professional activity, social science and psychology have long considered aging as a decline of physical and psychological capacities, a closing down of the possible. Such view has been largely reflecting negative social representations of the elderly, or “ageism.” A classical attempt to resist these negative representations has been to highlight older people’s activity and capacity to compensate losses and thus maintaining some possibilities open. However, such vision usually overlooks the social and cultural conditions of creating or dismissing the possible in people’s with older age. On the basis of such a critical analysis, an alternative proposition to resist negative representations is made here: old age may be a period in which the possible plays a unique

role. Aging is, after all, a life-course developmental process, and as such, the possible plays a central role in people’s lives; it is even more so in old age, where it becomes vital. In addition, old age confers people a unique position from which they can propose alternative possibilities for themselves and the world.

Keywords

Old age · Development · Possible · Imagination · Anger · Wisdom

Definition and Synonyms

“The words ‘old age’ and ‘centenarian’ refer to a social representation of people based on age” (Balard 2015). In most uses, “old age” refers to an age associated with the time of compulsory retirement or pension – somewhere in people’s 60s. In the last decade, given the increase of life expectancy, a distinction has been accepted between the “third age,” or the young old, and the “fourth age,” the oldest old and centenarians. Usually, it is admitted that the young old – in their 60–80s – maintain most of their cognitive and physical capacities, while the old-old, over 80s, meet various forms of decline. Obviously, these distinctions are relative; depending on sociocultural background, gender, geographical location, or biographical specificities, there is a very wide variety in people’s experience of “old age” – admitting that

it currently refers to a period which extends in average 20–30 years in rich societies, that is, from a period corresponding to the social marker of retirement until death (e.g., Baars et al. 2013; Biggs 2001). The very term “old age” with its variations (elderly, seniors, etc.) has been widely discussed and debated. For the purpose of this entry, the notion of “old age” is going to designate this socially admitted period extending beyond average retirement age; as category, “old age” cannot be disconnected from specific institutions, in their sociocultural context. In this entry, the expressions “people with old age” or “older people” will be used interchangeably so as to question the static implicit of the notion.

“Old Age” as a Reduction of the Possible

The history of old age and aging has been done by many, whether historians, sociologists, or psychologists (de Beauvoir 1970; Hall 1922; Troyansky 2016). Once officially retired, both Stanley Hall and Simone de Beauvoir tried to summarize a wide range of literature, ranging from philosophy to anthropology, sociology, psychology, and literature, in order to understand their current situation. As older intellectuals and scholars, formerly active and socially acknowledged, they found themselves suddenly socially excluded and treated as non-relevant nuisances – with reduced possibilities, which they fought with their writing; both were deeply aware of the sociocultural nature of such conception of age. Their situation and enquiry reflect the two “master narratives” that historians identify (Troyansky 2016): one of progress, in which the extension on life expectancy brings better old age in current times, and one of decline, considering that it was better to be old in ancient times. Beyond changes in life expectancy and the social role and positions ascribed to older people across time and places, these narratives seem to reflect deeper, contrasting social representations of aging, which have also tainted psychological approaches (Radtko et al. 2016).

On the one hand, there is a long-standing tendency in psychology and gerontology to show the illness, physiological, and psychological decline of

older persons (Anderson and Craik 2017; Johnson et al. 2005). This tendency is also reflected by the long-standing negative social representations of aging and the elderly, as frail, ill, lacking the tonicity, and innovation capacity of the young – what has been called “ageism” (Angus and Reeve 2006; Nelson 2005). It is manifested in the progressive professional and social exclusion of older citizens and, in care relationships, in a tendency to infantilize people (notably through the use of “elderspeak,” Balsis and Carpenter 2006). From such dominant and widespread representation, old age amounts to a shrinking of the possible in people’s lives: their health and body reduce possible actions, their chronological age limits social relationships, their access to social participation is limited, and reduced cognition makes thinking beyond what is, impossible.

On the other hand, and especially with the development of life-course and lifespan approaches, there has been a strong trend emphasizing the continuity of life and the specificities of development in old age (Baltes and Mayer 1999; Schaie 2016). If there has been a movement to defend the progressive disengagement of older people from social life after their working career (Cumming and Henry 1961), others have emphasized the many activities in which people may or, even, should be encouraged engaging in (Fernandez-Ballesteros 2008). Most of this literature is anchored in the lifespan approach developed by Paul Baltes and his team on the basis of the Berlin Aging Study (Baltes and Mayer 1999) and their SOC model – the idea that development requires selection (of skills and competences), optimization, and compensation (Baltes 1997). Literature has since explored the conditions in which people with old age could maintain a good quality of life, notably by compensating losses, in terms of autonomy, health, and subjective well-being (Freund 2008; Lang and Rohr 2015). This gave rise to approaches promoting and supporting active, positive, and, even, “successful” aging (Bülow and Söderqvist 2014; Fernández-Ballesteros 2019; Fernández-Ballesteros et al. 2019; Freund 2008; Gergen and Gergen 2010). This second trend seems to admit that old age demands a transformation of the possible in the person’s life and development. Within this trend, and at time, to contrast with the medical emphasis of

some part of that research, various authors have tried to highlight the specificities of age; one line of studies has thus stressed that old age may be an occasion to develop wisdom, seen a capacity to address complex issues in a measured and nuanced way (Ardelt and Oh 2016; Staudinger 1999; Sternberg and Lubart 2001). However, beyond the variety of definitions and operationalization of this concept, it becomes clear that wisdom is not attained by all in old age, although people with old age tend to show more wisdom than young ones (Glück 2015).

Various criticisms have been addressed to both trends: their centration on a model of the working (male) adult; their emphasis on youthful and healthy functioning; their hidden agenda (healthy older people are “less expansive” at a societal level); and their hidden discrimination of “unsuccessful” aging and its possible effects on people (Baars et al. 2013; Radtke et al. 2016; Stenner et al. 2011).

In any case, representations and narratives of old age are deeply connected to a vision of the possible, or the impossible for people with older age. To examine this question seriously, and to go beyond common sense, the possible will be defined here as the sociocultural and psychological process of generating alternatives, or of maintaining open alternative modalities to what is, mainly through imagination and multiple perspectives: the possible demand modes of “as-if” thinking or experiencing, a tolerance of uncertainty, or an opening to the future (Epstein 2019; Glăveanu 2018; Josephs 1998). On this basis, to summarize what has been exposed so far, a first broad research trend considers old age as a period of progressive and necessary reduction of the possible, until death arrives; a second group of research rather considers that through compensation, it is conceivable to maintain some possible in lives or reduce its transformation into the non-possible. But these issues may not only be a matter of theoretical preference, or people’s good will; what is possible for people with old age is to a great extent socially and culturally defined and can be questioned. Hence, under what conditions are these possible, possible at all? And then, is there nothing to create, expect, imagine, and open up as new possible with age?

What possible may people with older age actually create?

Old Age, Society, and the Possible

A developmental and sociocultural perspective that considers historico-cultural transformations, the social and material environment in which people’s lives unfold, and their unique perspective invites us to consider more carefully the issue of old age and the possible. In effect, such perspective considers that the person’s conduct is deeply enabled, supported, guided, and constrained by bodies, social others, as well as material and symbolic arrangements (Brinkmann 2011; Brown and Reavey 2017; Cole 1996; Fuhrer and Josephs 1998; Gillespie and Zittoun 2010); it can thus draw on current studies in sociology, anthropology, or geography of old age.

There is a growing body of literature showing how societies themselves exclude and cut down the possible in older people. Anthropology, sociology, and history have largely shown that societies and symbolic systems can find extremely different ways of dealing with their older members, from exclusion and abandonment to careful inclusion and valorization of age (de Beauvoir 1970; Troyansky 2016). In industrialized and rich societies, there is a clear systemic tendency to exclude people with old age. The question of negative representations of older people (“ageism”) has already been mentioned above. In addition, in many countries, the system of retirement with its compulsory age limit tends to exclude older citizens from the public arena, or from participation in the *polis* (unless the rare members of Administration councils or politics). It also has to be mentioned that, until recently, housing facilities such as retirement homes and resorts proposed to older people were located out of urban centers. Finally, in many countries, the system of pensions or retirement puts older people in a state of relative poverty which, together with these other aspects, may prevent them from fully participating in social and cultural life (for an overview on social exclusion, see, for instance, Walsh et al. 2016).

On a smaller scale, it is clear that the environment in which people with old age live can support, or not, what is possible for them. Through their reconceptualization of the notion of care, social sciences have invited to consider the whole social and material environment participating in people's well-being. Close and distant relationships, formal and informal places, material arrangements, and temporal organization can all be seen as participating in the people's "landscape of care" (Milligan and Wiles 2010; Wang 2019); these can evolve as people develop their own trajectories (Kemp et al. 2013). In this sense, it may be worth considering the wholeness of older people's life situation: the settings in which their lives take place, the social representations and discourses they are exposed to, the cultural experiences they may have, and the social networks and the daily material and practical arrangements in which they live. A growing number of studies have examined the whole lifeworlds of older people, showing that place, social relationships, activities, and engagement can support the possible (such as Lieblich's 2014 study of a community of retired people next to a beach). Other studies examine smaller-scale arrangements that may support concrete, material, as well as symbolic possibilities: assistive technologies that enable people to feel safe enough to maintain their explorations of places (Cahill et al. 2018); urban arrangements which are more inclusive and facilitate social and cultural participation (Jianxi et al. 2018; Pan et al. 2018); new technologies that support transnational and intergenerational communication (Iannaccone 2015); or modes of housing that afford intergenerational exchanges and social participation (Jayantha et al. 2018; Labit 2016).

Conversely, it is important to document ways in which life conditions for older people can close down the possible. Above were mentioned various forms of social exclusion, social representations and discourses. In addition, there are concrete actions that limit the possible in people's lives. For instance, in a moving auto-ethnographic account, community psychologist Seymour Sarason described the poor conditions in which he was hosted during his final years in

an American nursing home, which can be seen as a slow erosion of the possible (Sarason 2011). Life conditions in the nursing home can be widely improved, turning these into places supporting people's interest and engagement even in very old age – a reflection done in many countries.

The Unique Possible of Old Age

Beyond a better understanding of the sociocultural production or reduction of the possible in older age, one also has to rethink the specificities of old age in what regard the possible. Even more, one can argue that the possible plays a key role in the life of older people, and their age also gives them a unique outlook on the creation of the possible.

First, the simple fact that people with older age have lived longer and have experienced changing sociocultural environments gives them a unique view on the past, present, and future. This argument has two aspects: to start with, it is likely that people who lived longer simply lived a larger variety of experiences from which they could learn and generalize (Zittoun and Baucal *in press*; Zittoun et al. 2013). Of course, this is somehow simplistic, as some younger people may have a very varied experience and some older person conduct their lives in a more repetitive way, preparing them less for change. The second aspect of the argument is more specific: only people who lived longer have seen, together with the psychological experience of their life, the sociocultural context evolve for so many years (Hviid *in press*; Zittoun and Baucal *in press*). Hence, having seen and experienced sociocultural transformations and their impact on societies, their lives, and these of others, people with older age may as well draw on their knowledge of the past and society as resources to question the present and to open new possibilities for the future. This kind of knowledge has thus been coined as "phronesis," or practical wisdom (Hviid *in press*; Trowbridge and Ferrari 2011). On the basis of their unique reading and experience of the past, people with older age may, in some conditions,

actually see and imagine alternative possible for society.

Second, at a more psychological or subjective level, many authors have questioned the actual experience of aging and the many ways by which people make sense of their lives, past and present. Interestingly, a wide range of approaches tend to emphasize the fact that living a meaningful life with older age actually depends on one's relationship to possible futures. Narrative gerontology, examining people's life's narratives, has shown the importance of "narrative openness" in old people, even in retirement homes (Gubrium 1995, 2011). In contrast, people manifesting "narrative foreclosure" – that is, who are not able to organize their narrative toward a future – tend to give up on living (Freeman 2011). Psychoanalytical approaches to the very old and people with terminal illnesses have emphasized the core role of desire – desire to live and desire for others and things – in people's lives: this only drives people toward the possible and the future (Quinodoz 2008; Villa 2010). Interestingly, lifespan and more cognitive approaches have shown similar phenomena: in their reading of the Berlin Aging Study, Smith and Freund (2002) realized that both old and very old respondents produced a certain number of hopes for their futures – as much as fears – and that, although some of these were constant, most of them were for a good part dynamic. These hopes were not only oriented toward compensating losses (e.g., health related) but actually toward creating new possibilities for the self. Based on neurocognitive evidence, Sakaki and colleagues (Sakaki et al. 2018) have shown that curiosity and openness to experience may be good predictors for cognitive health and well-being. These evidences point to the same direction: it seems to be key, for older persons, to maintain an openness to what is to come, by being engaged in the present and toward alternative possibilities, and possible futures; this tension toward the future of course draws on past, personal, embodied, relational, and also world-related experience. In this sense, development in older age seems clearly to be deeply related to a form of life creativity, fed by imagination. An important question is thus at what sociocultural

and relational conditions can such imagination but preserved and supported (Zittoun and de Saint-Laurent 2015; Zittoun and Sato 2018).

This leads us to a third form of experience of the possible for older: the actual transformation of these conditions. Indeed, if older people may gain a deeper understanding of their world and maintain openness to the possible, many also understand that their sociocultural world limits the possible for them and yet also that only by changing the world they can turn the imagination of the possible into the actual (Zittoun et al. 2020). Such realization demands a radical redefinition of old age, the role of old age in our society, and what is appropriate or not for people with older age – a poignant call made by de Beauvoir herself (de Beauvoir 1970). Interestingly, reading Stanley Hall and Betty Friedan's writings on aging, Woodward (2002) justly notes that these authors had to deal with their anger of being socially excluded. She also questions the discourse on "wisdom": supporting positive aging and wisdom is in some way, she argues, to ask older people to come to terms with their situation and exclusion; it demands acceptance of the status quo. In contrast, one could support anger in old age: only anger could promote revolt and change and open new possibilities for old age (Woodward 2002). Thus, it is important to observe that groups of older people have started to organize themselves into political activism, under revealing names such as "raging grannies", "grandparents for asylum" or "grandparents for climate," claiming that their age and experience lead them to some specific expertise. They also emphasize the freedom age gives them: without not much to lose, out of social norms, they gain a freedom of speech and action which enables them to become active in social transformations and in the creation of new possible (Caissie 2011; Hviid *in press*).

Summary: Supporting the Possible and Old Age

Older age takes an increasing importance in societal debates. The two dominant narratives about old age are, on the one hand, a story of bodily

decline and closing down of possibilities and, on the other hand, a narrative of compensation of losses likely to maintain the possible. A more critical look brings two other arguments to the fore: first, that the possible in old age is dependent on social, material, and symbolic conditions, which can easily be bettered, and second, that the possible plays a core and vital role in old age. It may be even argued, first, that the possible plays a vital role in people with older age and, second, that older people's perspective on the world may actually enable them to uniquely participate to the creation of new societal possible. How can we – as society, scientists, or practitioners – support the possible in old age? This demands both empirical work and theoretical new conceptualizations of human development in general and old age in particular. In effect, conceptualizing human life in its sociocultural environment, together with recognizing the actual social, material, and symbolic conditions that participate in the closing down or opening up of the possible for people with old age, calls for a radical transformation of our understanding of what old age is. We have to move from a vision of old age as, for the worst, reduction of the possible, or for the best, and as maintenance of the possible, to understand the uniqueness of the possible in life with old age.

Cross-References

- Imagination
- Narratives
- Possible In Human Development
- Social Change
- Wisdom

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Open-Mindedness

Jack M. C. Kwong

Department of Philosophy and Religion,
Appalachian State University, Boone, NC, USA

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Open-mindedness · Intellectual virtue ·
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Introduction

What is open-mindedness? Is it a positive trait that we should acquire and cultivate? On the face of it, these questions seem to have straightforward answers: To be open-minded is to be receptive to ideas that are novel or differ from one’s own. Moreover, such a receptivity appears to be unqualifiedly good in that exercising it helps to improve one’s epistemic status, whether by removing false beliefs and acquiring true ones or by expanding one’s understanding. Consider two people, one of whom is open-minded and the other is not. Intuitively, the person who is open-minded – that is, the one who seeks to expose herself to new ideas and to consider them – seems to stand a better chance of obtaining intellectual goods than the one who is not. Intuitive and appealing as these answers may be, they are also simplistic and incapable of addressing the two opening questions, which are deceptively complex and difficult. For one thing, common misconceptions abound about exactly what it means to be open-minded. For another, serious objections have been advanced to show that open-mindedness might not be as rosy a trait as it is commonly assumed. This entry summarizes recent work in philosophy on the topic of open-mindedness, with a focus on how philosophers

have answered the two above questions. It opens with an examination of some misconceptions held about open-mindedness, followed by a review of some contemporary theories of the character trait. After looking at some recent challenges that have been raised against open-mindedness, as well as some responses to them, the entry concludes by discussing how open-mindedness is relevant to the study of the possible.

What Open-Mindedness Is Not

Recent literature on open-mindedness in philosophy has revolved around two questions: (1) What is the nature of open-mindedness? and (2) Is open-mindedness a character trait that should be cultivated and exercised? These questions are, of course, related: Whether or not we should practice open-mindedness depends on what it entails to exercise the character trait, specifically what it commits us to do. There are misconceptions, however, that obstruct a clear understanding of open-mindedness. One misconception is that open-mindedness is equated with the mere **openness** of the mind. Accordingly, an open-minded person is always receptive to new ideas and willing to give them serious consideration, as if her mind's gates, so to speak, is always open to any incoming idea. Any attempt to bar any idea from entry would be a sign of her closed-mindedness.

A second misconception is that a person is open-minded only when she has not made up her mind about a specific issue. In other words, open-mindedness is perceived to be incompatible with a person's having firm and entrenched beliefs. The reasoning behind this misconception is that if a person has already made up her mind on a subject matter, she takes her beliefs on it to be true and does not entertain any doubts about them. She thus lacks any reason to be open-minded toward other ideas. To do otherwise would imply that she thinks that these other ideas may be true, which in turn suggests that she has doubts about her firm and entrenched beliefs (e.g., see the discussion in Adler (2004) and Riggs (2010)). According to this misconception, open-mindedness therefore applies only when a person has not thought

much about or decided on an issue (e.g., see Gardner 1993).

A third misconception is that open-mindedness seems to demand, at least from a pre-theoretical way of thinking about the character trait, both receptiveness to novel ideas and acceptance of them. It is not enough just to consider novel ideas. If rejection comes after serious consideration, it is still seen as closed-mindedness. Clearly, it is unreasonable and unwise to make indiscriminate embrace of all novel ideas a common practice.

What Open-Mindedness Is

Philosophers have rejected all of the above misconceptions. The background assumption they employ in discussing open-mindedness is that it is an intellectual virtue (e.g., see Baehr 2011; Kwong 2016, 2017; Riggs 2010). Roughly speaking, a character trait is considered an intellectual virtue when its exercise is conducive to the attainment of intellectual goods, such as truth, knowledge, and understanding. Its acquisition and cultivation require much effort on its practitioners' part, which is why a person can be praised for possessing a virtue and criticized for lacking it (or possessing the associated vice). Examples of intellectual virtues include intellectual courage, honesty, perseverance, humility, generosity, responsibility, conscientious, and open-mindedness. Following the neo-Aristotelian tradition, philosophers conceive of a virtue as flanked by two vices in practice, being too much (excess) or too little (insufficiency) (e.g., Zagzebski 1996). In the case of open-mindedness, the vices associated with it are gullibility (or excessive open-mindedness) and closed-mindedness or dogmatism. Accordingly, virtuous open-mindedness occupies the middle between these vices, and denotes the disposition to exercise the character trait *appropriately*: One has to perform the right sort of intellectual behaviors at the right time, in the right contexts, and for the right reasons.

What are the intellectual behaviors distinctive of an open-minded person? Or, what is the unique characteristic psychology of open-mindedness

that sets it apart from other intellectual virtues? It is tempting to think of open-mindedness as constituted by a disposition to revise or give up one's beliefs when confronted with opposing evidence (see Hare 1979, 1985; Riggs 2010). Despite its intuitive appeal, philosophers have rejected this definition of open-mindedness. Wayne Riggs (2010), for example, has argued that this construal of open-mindedness makes it indistinguishable from rationality, which is a preparedness to revise one's beliefs in the face of contrary evidence. According to him, being rational is *not* the same thing as being open-minded. Similarly, being irrational is not the same as failing to be open-minded. The aforementioned disposition is not therefore a tenable definition of open-mindedness.

Other accounts have been proposed to discuss the characteristic psychology of open-mindedness. Riggs has argued that, in addition to the disposition to revise one's beliefs in the face of contrary evidence, an open-minded person exercises certain "habits of thoughts" (2010). In particular, the person has to cultivate an ongoing self-awareness of her biases and prejudices that may hinder his/her pursuit of intellectual goods, and to be vigilant in detecting their presence so as to minimize their effects. For Riggs, an open-minded person is someone who recognizes her own fallibility in these respects, and stands ready to consider alternative beliefs while reassessing her own in light of them.

Many accounts of open-mindedness, like Riggs's, implicitly assume that the trait applies mainly in cases in which there is personal conflict, namely, when a person's cherished beliefs are challenged and adjudication is necessary (e.g., Adler 2004; Hare 1979, 1985; Riggs 2010). An alternative formulation of open-mindedness comes from Jason Baehr (2011). Baehr points out that open-mindedness can also be exercised in cases beyond those in which a person's beliefs are challenged or require rational assessment. For instance, a judge has to exercise open-mindedness in adjudicating disputes that do not impinge upon her personal beliefs. At the minimum, she must hear the plaintiff's and defendant's arguments out with an open mind and remain impartial instead of rushing to make a premature judgment. Likewise,

a science student needs to have an open mind in order to grasp novel concepts, such as Einstein's General Theory of Relativity. In such a case, open-mindedness is needed not to make rational assessments but to make sense of drastically different ways of thinking. According to Baehr, these are also instances of open-mindedness. What they share in common, he notes, is that the subjects in them all "cognitively transcended" their default viewpoints so as to take up another in order to give it serious consideration (2011). Put another way, each had to temporarily suspend her usual way of thinking to make room for a novel one. Such a cognitive transcendence, for Baehr, constitutes the heart of open-mindedness.

A third account of open-mindedness has been proposed by Jack Kwong, who construes open-mindedness more broadly as a willingness to *engage* with novel viewpoints (Kwong 2016). For him, to engage with an idea is to make room for it in one's mind and give it serious consideration. Additionally, the type of intellectual activities required for engagement will be determined by the epistemic context. Some cases will call for evaluation and assessment, while others will merely involve attempts to understand. Following Baehr, Kwong agrees that open-mindedness extends beyond personal conflicts. However, Kwong differs in disputing that cognitive transcendence is always needed to give differing ways of thinking serious consideration. A person can come to see a different idea as true or false from *within* her own viewpoint. The principal rationale behind Kwong's account is that it addresses both virtuous open-mindedness and its associated vices: Dogmatic or closed-minded people tend to lack the willingness to engage with any different idea, and the gullible, only too willing to do so, but the virtuously open-minded tend to exhibit such a willingness only under suitable circumstances.

While the three accounts above (Riggs, Baehr, and Kwong) differ in terms of what constitutes the core of open-mindedness, they agree that the character trait requires that a person be disposed to give novel or differing ideas *serious consideration*. They also agree that a genuinely open-minded person must exhibit relevant intellectual

behaviors with the *proper motivation*: She must do so out of a desire or love for the truth and other intellectual goods. Thus, someone who gives serious consideration to novel ideas because she is motivated by fame and status can hardly be characterized as genuinely open-minded. Despite their individual emphases, all three accounts can perhaps be seen as complementary to one another to furnish a comprehensive description of open-mindedness (Kwong 2016): Kwong's as identifying the general disposition behind open-mindedness, Baehr's as discussing a key skill in engaging with (some) novel ideas, and Riggs's as highlighting some of the central reasons why an open-minded person would want to be so engaged.

Is Open-Mindedness an Intellectual Virtue?

Recall that open-mindedness is generally regarded as an intellectual virtue. Pretheoretically, it is considered a positive trait that people should possess. A main reason is that it is conducive to obtaining intellectual goods such as truth, knowledge, and understanding. Consider two people who are roughly equals in terms of intellectual abilities and knowledge, except one is open-minded while the other is closed-minded. Intuitively, it would seem that the former is more likely to access and acquire intellectual goods than the latter. By being disposed and willing to give novel ideas serious consideration and to reassess her own in light of them, the open-minded person stands a better chance of uncovering her false beliefs, acquiring true ones, and expanding her understanding. Conversely, a closed-minded or dogmatic person refuses to engage with any new idea or reevaluate her own beliefs and forfeits opportunities for acquiring intellectual goods.

This neat and tidy view of open-mindedness has recently been challenged by philosophers (e.g., Carter and Gordon 2014; Cohen 2009; Curzer and Gottlieb 2019; Fantl 2018; Ferkany 2019; Levy 2006). According to them, open-mindedness is not always conducive to the aforementioned intellectual goods. Some have even

suggested that it is an intellectual vice under certain circumstances. J. Adam Carter and Emma Gordon (2014), for instance, have questioned open-mindedness's relationship with truth, arguing that the two are not intrinsically connected and thus, open-mindedness does not guarantee that truth will be obtained. The lack of such a connection is especially troubling in cases where a person *already* possesses true beliefs but decides to give alternative ideas – false ones – serious consideration. Ideally, she would come to reject these ideas. However, she might not do so, especially when these ideas are deceptive and appealing, or so technical that the person lacks the relevant skills and knowledge to assess them. Undesirable consequences will include her swapping her true beliefs with false ones or being beset with open and unanswered objections. Either way, the critics point out, her exercise of open-mindedness can cause her to be epistemically worse off.

Further considerations have been adduced to show that open-mindedness can be a risky or dangerous practice. One is that open-mindedness is thought to incur the practitioner's commitment, as an active duty, to seek out opposing views to her own (Levy 2006), thus opening the door to false and deceptive views, or views that she lacks the requisite expertise to assess, and ending up in a worse epistemic situation. Another is that open-mindedness seems to be an inappropriate exercise in epistemically unfriendly or hostile environments. Descartes's hypothetical scenario of an evil genius comes to mind, wherein an all-powerful being is preoccupied with the task to deceive us to ensure that our beliefs are false. Other scenarios include living in a world where everyone lies or misleads, or where only books with factual mistakes are available. Under these circumstances, open-mindedness, far from being conducive to intellectual goods, is a sure way of losing them. While it is tempting to dismiss these scenarios as fanciful and far-fetched philosophical thought experiments, it should be noted that the world in which we inhabit may already be epistemically unfriendly and hostile. Consider social media platforms like Facebook that many people regularly use or abuse. Fake news, deepfakes, click bait, information engineered to be

misleading, and lies abound on such venues. To exercise open-mindedness on social media is therefore likely going to result in a loss of intellectual goods.

Critics of open-mindedness therefore have challenged the status of open-mindedness as an intellectual virtue. In their view, a virtue is a character trait that is supposed to be exercised across contexts. But certain contexts, like an epistemically hostile environment, are certainly unsuitable for exercising open-mindedness. To preserve one's epistemic integrity, these critics argue that it is better – even virtuous – to be dogmatic and closed-minded in such environments.

Against these criticisms, efforts have been made to defend open-mindedness. One strategy is to focus on the commitments of open-mindedness. A condition of what it means to be virtuously open-minded is to know *when* to exercise the trait. Baehr has suggested that a person should be open-minded when it is reasonable for her to believe that doing so stands a good chance of obtaining the truth (2011). For example, she may judge that the source or author of the opposing view is reliable and trustworthy, or that her own beliefs may be biased or unsupported by evidence. Were she to exercise open-mindedness under these circumstances, she would stand a good chance of improving her epistemic standing. By contrast, if she were aware that it was an epistemically hostile environment where truth was scarce and falsehoods and misleading claims were rampant, then she qua an intellectually virtuous agent should choose *not* to be receptive to novel ideas. The point is that her refusal to engage with new ideas under these circumstances would not suggest that she is closed-minded; she does not, after all, possess the disposition to dismiss novel ideas without a good reason. Rather, her refusal would be based on her judgement as a virtuously open-minded person that her being receptive in this instance would be highly risky. To paraphrase Riggs, she could refuse to consider these ideas *open-mindedly* (Riggs 2010). To be virtuously open-minded, then, is not just to be receptive to different ideas but also to have the

practical **wisdom** to know *when* to be so receptive.

A second way to mitigate the critics' worries is to emphasize another key feature of being open-minded. Advocates of open-mindedness all agree that it involves giving novel ideas *serious consideration*. A person who is receptive to novel ideas but only considers them in a casual manner can hardly be characterized as truly open-minded. Simply put, to give an idea serious consideration is to interpret and assess it thoroughly, attentively, objectively, fair-mindedly, charitably, diligently, and honestly. One must also have the relevant intellectual skills and capabilities for doing so. According to this line of defense, the virtuously open-minded person would have the resources to detect and screen deceptions and falsehoods from true ideas. That is, she would have the intellectual know-how not to be led astray from the path toward truth. While this is not a foolproof method – after all, human beings are fallible – defenders of open-mindedness claim that by giving novel or opposing ideas serious consideration, one could reap intellectual goods *more often than not*, and that in this sense open-mindedness is conducive to such goods.

A third way to respond to criticisms is to argue that virtuous open-mindedness only requires practitioners to be motivated in the right way, regardless of results. The discussion so far has assumed that open-mindedness is a reliable exercise in obtaining truth, knowledge, or understanding. Some philosophers, however, have elected to exclude this success as a condition for the possession of the virtue. James Montmarquet (1993), for instance, has pointed out that some of history's great minds (e.g., Aristotle, Galileo, and Newton) got things wrong though they had exercised traits like open-mindedness, perseverance, intellectual courage, etc. Despite the fact that they failed to acquire true beliefs and knowledge, they could still be praised for exercising those intellectual traits. This is because they did so with the proper motivation, namely, out of a desire and love for truth (and other epistemic goods). For philosophers like Montmarquet, proper motivation is sufficient ground for attributing these virtues to these

historical figures, even though they were unsuccessful in obtaining intellectual goods. Applying this defense to one of the critics' above worries, the person who is deceived by an evil genius but who exercises open-mindedness out of a desire and love for truth can still be praised as virtuous even if she does not end up with any truths.

Open-Mindedness and the Possible

Open-mindedness eschews intellectual limits and borders and thrives on the possible. Vlad Glăveanu has argued that to engage with the possible is to enrich and expand our experience of ourselves, others, and the world by “remembering the past, imagining the future, considering alternatives, anticipating problems, and continuously engaging in ‘as if’, ‘what if’ and ‘if only’ thinking processes” (Glăveanu 2018, 519). It is to go beyond how things actually are and to anticipate, imagine, **wonder**, and create **possible worlds**, selves, pasts, and futures. Open-mindedness plays a key role with respect to how we can move outside of the “**here and now**” for the possible. Consider someone who is closed-minded, that is, someone who refuses to engage with, or is not receptive to, novel ideas. She is stuck in her existing beliefs, interpretations, and explanations (about the world, self, past, and future), her usual ways of thinking, and her habits. Because her mind's gates are closed, she cannot conceive of and experience alternative ways for the world, herself, the past and the future to be. She shuts out possible epistemic goods, now broadly construed to include not only truth, knowledge, and understanding, but also interesting, creative, transformative **insights** and ideas. Only by being open-minded would she be free to embrace new possible ways of thinking.

Open-mindedness does not only concern our receptivity to the possible but also governs our conception of it. A person can be imaginative and creative, and easily inspired by novel ideas but fail to be open-minded. Even though she may be highly receptive to alternative views of how things could be, she can refuse to take them seriously or reject

them without justification in the end. Recall the two vices that accompany the virtue of open-mindedness: gullibility and dogmatism. Depending on which vice prevails, the consequence of failing to be virtuously open-minded is that her experiences of the world, self, past, and future would *not* be enriched by possibilities, real or imagined. What this suggests is that virtuous open-mindedness can play a *regulatory* role with respect to other cognitive traits or processes that are fundamental to our engagement with the possible. We can be as imaginative, anticipatory, or creative as we want to be, but unless we are truly prepared to take the thoughts and conceptions from our imagination, creativity, **anticipation**, and other cognitive processes seriously and if necessary, change our minds in light of them – both of these constitutive features of open-mindedness – we will not enhance our understanding and knowledge of ourselves, others, and the world.

Open-mindedness can regulate other cognitive processes or traits in terms of the possible in yet another way. As noted, an open-minded person is aware that she is fallible and her existing ways of thinking about the world, self, past, and future may be limited or mistaken. Her desire and love for truth, knowledge, and understanding motivate her to be receptive to novel ideas – that is, to other possible ways of thinking about the world, self, past, and future. However, not every novel idea will merit her attention and effort, for she will only consider those that she judges to originate from a reliable and trustworthy source or have a reasonable chance of being true. And when she does give ideas consideration, she does so seriously: To truly appreciate and grasp the novelty of these views, some of which may differ radically from her usual ways of thinking, she will need to recruit and employ resources such as her **imagination** and **creativity** in order to transcend her own default cognitive viewpoint. If after serious **inquiry** she deems an idea to have merit or be informative, she will incorporate it, either as a new belief or one that replaces a previously false or inferior one. On this positive account, we see that open-mindedness as an intellectual virtue can regulate cognitive processes relevant to the possible

in several ways: It prepares the mind to be in a state where it could be struck by *wonder* or readily *inspired* by external sources; it *inspires* a person to pursue certain unfamiliar avenues or modes of thinking; and it summons *imagination* and *creativity* in order to form or grapple with different perspectives.

The foregoing discussion suggests another dimension that open-mindedness can bring to the conversation about the possible. Although interesting work has been done to examine the cognitive mechanisms for engaging with the possible, and to identify the sociocultural factors that bring out and highlight differences in positions and perspectives, little attention has been paid to the *normative* side of such engagement. A relevant normative issue that arises in this context is the extent to which we should be open-minded with respect to the possible. We have already seen that a person can be *too* open-minded in that she is willing to consider ideas that she should not. She may, for instance, contemplate possible but misguided ways of understanding or reconstructing her past, resulting in her losing touch with reality or being self-deceived. Or she may imaginatively or creatively construct possible worlds with the potential that their realization may harm others. In these cases, virtuous open-mindedness demands that she refrain from these possible ways of thinking. Conversely, a person can also fail to be open-minded in that she refuses to consider any perspective or position that differs from her own. Such a failure is especially damaging and critical if it pertains to issues of social and moral significance, such as race, **gender**, and class. Under this circumstance, virtuous open-mindedness demands that she take certain possible ways of thinking seriously, ways that could expand her narrow viewpoints or correct mistaken ones. In sum, introducing open-mindedness can illuminate *appropriate conditions* under which a person should engage with the possible, conditions that pertain to morality, rationality, and truth. Virtuous open-mindedness prescribes that we open ourselves up to possible ways of thinking about the world, self, past, and future, and do so in a way that enhances and enriches our experiences in an intellectually responsible way.

Cross-References

- ▶ [American Pragmatism](#)
- ▶ [Anticipation](#)
- ▶ [“As If” Thinking](#)
- ▶ [Creativity](#)
- ▶ [Here and Now](#)
- ▶ [Imagination](#)
- ▶ [Insight](#)
- ▶ [Openness to Experience](#)
- ▶ [Possible Worlds](#)
- ▶ [Wisdom](#)
- ▶ [Wonder](#)

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Openness to Experience

Alexander P. Christensen
University of North Carolina at Greensboro,
Greensboro, NC, USA

Abstract

As one of the five major personality traits, openness to experience has been established as a fundamental factor of personality. Yet its history, and what it constitutes, has not always been clear. This becomes obvious when observing how the label has changed over the decades: from *Inquiring Intellect* to *Intelligence* to *Culture* until finally the consensus of *Openness to Experience*. This final connotation denotes people who are flexible and receptive to all experiential possibilities. It is this flexibility that perhaps most defines open people and enables them to be creative, establish complex worldviews, and probe the depths of human experience. Therefore, open people not only *see* more possibilities but also *engage* with them. This chapter starts with a brief review of the history of openness to experience that leads into contemporary conceptualizations. It then moves on to discussing research on the trait's associations with cognitive, perceptual, and behavioral outcomes. Finally, specific emphasis is placed on types of experience and how these may vary depending on people's characteristics of openness to experience.

Keywords

Openness to experience · Creativity ·
Cognition · Perception · Curiosity

Definition and History

Openness to experience is a broad and complex trait whose definition has been contentiously debated over the years. The origins of openness to experience can be traced back to Cattell (1947), who used an intelligence test and natural

language descriptor ratings to derive primary factors of personality. Of these factors, he found three that resemble contemporary aspects of openness to experience: Intelligence, Imaginative Emotionality, and Bohemian Intellectualism. Performing a similar study, Fiske (1949) identified five recurring factors with the fourth factor being labeled, "Inquiring Intellect," denoting characteristics that emphasized intellectual curiosity (see chapter ► ["Curiosity"](#)). Later factor analytic studies found that these intellectual characteristics tended to associate with more "culturally refined" qualities such as autonomy and appreciation for aesthetics, leading to a label of "Culture" (Norman 1963; Tupes and Christal 1961/1992).

Since these seminal studies, the conceptualization of openness to experience has continued to expand with studies examining English language adjectives (Goldberg 1981) and behavioral correlates such as hypnotic susceptibility (Tellegen and Atkinson 1974). The culmination of these works formed a consensus label of "Openness to Experience" (Costa and McCrae 1976; Rogers 1954). Costa and McCrae (1978) led this consensus by elaborating on the trait's structural definitions and establishing a broader agreement on the trait's conceptualization (McCrae and Costa 1997). Encompassing this broader definition, open people were described as having "[flexible] boundaries in concepts, beliefs, perceptions, and hypotheses" (Rogers 1954, p. 254) and by "[their] breadth, depth, and permeability of consciousness [(see chapter ► ["Consciousness"](#))], and [their] recurrent need to enlarge and examine experience" (McCrae and Costa 1997, p. 826).

More recent perspectives are centered around these definitions, which is reflected in contemporary self-report inventories. McCrae and Costa's own inventory, the NEO-PI-3 (McCrae et al. 2005), was designed to capture the breadth of the trait using six lower-order facets: actions (openness to new experiences on a practical level), aesthetics (appreciation of art and nature; see chapter ► ["Aesthetics"](#)), fantasy (receptivity to the inner world of imagination; see chapter ► ["Imagination"](#)), feelings (openness to inner

feelings and emotions; see chapter ► “[Emotion](#)”), ideas (intellectual curiosity), and values (readiness to reexamine one’s own values and those of authority figures). Another notable inventory is DeYoung et al. (2007) Big Five Aspects Scale, which breaks openness to experience into two aspects: Openness and Intellect. The Openness aspect (hereafter referred to as Experiencing; Connelly et al. 2014) denotes engagement with aesthetic and perceptual experiences, while the Intellect aspect denotes engagement with semantic and intellectual information. These aspects represent higher-order summaries of the NEO-PI-3’s facets, reflecting separate but related dimensions of openness to experience.

Although a broader consensus has been established in the conceptualization and assessment of openness to experience, there still remains some debate about the taxonomy of the trait – that is, the number and type of characteristics that make up the trait. Connelly et al. (2014) examined this issue using a top-down theoretical sort and meta-analytic approach to identify “core” components of openness to experience that were solely related to openness to experience and “compound” components that were related to openness to experience and other traits. In their study, they identified eleven components: four core (aestheticism, openness to sensations, nontraditionalism, and introspection) and seven compound (openness to emotions, innovation, variety-seeking, fantasy, tolerance, autonomy, and thrill-seeking).

Similarly, Christensen et al. (2019) examined this issue using a bottom-up network analytic approach to identify components from four different openness to experience inventories. They found ten components (aesthetic appreciation, diversity, fantasy, imaginative, intellectual curiosity, intellectual interests, nontraditionalism, openness to emotions, self-assessed intelligence, and variety-seeking), which largely corresponded with Connelly and colleagues’ findings. When taken together, these studies provide a fruitful framework for developing new measures of openness to experience that comprehensively represent its contemporary taxonomy.

Outcomes Related to Openness to Experience

The breadth of characteristics encompassed by openness to experience are associated with nearly every faculty of human psychology – from cognition and memory to perception and emotion to behavioral and psychopathological functioning. Before discussing some of these outcomes, it is important to make clear *who* openness to experience refers to. Although it is common to say that individual people possess openness to experience, it is more appropriate to say that openness to experience is a common dimension of personality that represents “a category for classifying functionally equivalent forms of behavior in a general population of people” (Allport 1961, p. 340). Therefore, when referring to open people, this reference is for a population of people that are higher on characteristics of openness to experience relative to other populations rather than an individual person.

The most researched outcomes of openness to experience are related to cognition. More than any other trait, openness to experience is defined by cognitive characteristics (Zillig et al. 2002). This is perhaps not surprising given the trait’s early links to intelligence, including intelligence being considered a part of the trait (Cattell 1947). Beyond intelligence, open people’s most notable attribute is their tendency to be creative (Oleynick et al. 2017). This association is found in nearly every measure of creativity: divergent thinking (Silvia et al. 2008; see chapter ► “[Divergent Thinking](#)”), creative self-efficacy (Karwowski and Lebuda 2016; see chapter ► “[Creative Mindsets](#)”), creative hobbies (Conner and Silvia 2015), and creative achievements (Kaufman et al. 2016).

One common cognitive thread underlying both creativity and openness to experience is their neural architecture. Both phenomena have been shown to be associated with the functional connectivity between cognitive control (lateral prefrontal and anterior inferior parietal regions) and default mode networks (a set of cortical midline, medial temporal, and posterior inferior parietal regions; Beaty et al. 2015, 2018). These

networks are thought to support executive and associative memory processes, respectively. Further evidence of this cognitive link has been demonstrated in studies examining the associative structure of memory. Both creative and open people are shown to have more interconnected and flexible associations between concepts in their semantic memory, which may allow them to be more cognitively flexible (Christensen et al. 2018; Kenett et al. 2014). Therefore, open people may think and reason about the world differently than less open people.

Open people may not only think about the world differently but also perceive the world differently. There is growing evidence that open people have different reactions to sensory and perceptual stimulus. Early work in this area has focused on *aesthetic chills* or the experience of goose bumps and shivers in response to the arts, which has been denoted as “a universal marker of openness to experience” (McCrae 2007). Open people seem to experience aesthetic chills more often in response to art (Nusbaum and Silvia 2011) and music (Silvia and Nusbaum 2011) than less open people. Awe (see chapter ► “Awe”) is another experience open people often have in response to aesthetic appreciation (e.g., nature and music; Silvia et al. 2015), including being more likely to feel like crying during music that produces awe experiences (Cotter et al. 2018). This seems to suggest that open people often experience a broad range of emotions. This is supported by research demonstrating that open people experience mixed emotional states (i.e., concurrent feelings of positive and negative affect) more often than less open people (Barford and Smillie 2016).

These mixed emotional states sometimes occur with appraisals of visual art, indicating that there’s a connection between cognitive and perceptual processes (Barford et al. 2018). More recent work has demonstrated that open people’s perceptual processing may differ at low levels, suggesting these emotional states may start from the bottom-up (Antinori et al. 2017). Antinori et al. (2017) examined the phenomenon of *binocular rivalry* – when visual perception alternates between stimuli and neither stimuli are fully suppressed – in relation to personality. They

found that open people reported experiencing more binocular rivalry, meaning that open people were more prone to combining perceptual information at a basic level.

This finding is consistent with evidence indicating that open people tend to have a “leakier” filter for preconscious information, which is often referred to as *latent inhibition* (Peterson et al. 2002). Open people are shown to have decreased latent inhibition, meaning they are less likely to ignore stimuli previously experienced as irrelevant, thereby increasing the range of associations for stimuli. These overinclusive associations may come at a cost: seeing meaningful patterns and associations when there are none. This phenomenon is known as *apophenia* and is a prominent feature of psychosis, particularly with positive symptoms of schizophrenia-spectrum disorders (i.e., symptoms that are present that are usually not). Given this connection between openness to experience and overinclusive associations, it is not surprising that there is a positive association between openness to experience and *positive schizotypy* (subclinical to clinical traits of positive schizophrenia-spectrum symptoms; Kemp et al. *in press*).

In DeYoung et al. (2012) Openness/Intellect simplex model, apophenia is at the extreme end of the Openness (Experiencing) aspect. More recent research has expanded on this view, positing a unified framework that places the Experiencing aspect on the same continuum with psychoticism and apophenia (from typical personality variation to psychopathology; Blain et al. 2020). This framework is supported by neurological evidence demonstrating that the shared variance between Experiencing and Psychoticism is linked to increased network coherence in the default mode network and decreased coherence in the cognitive control network (Blain et al. *in press*). This suggests that those who are on the extreme end of the Experiencing continuum may be more psychosis prone.

Possibility and Types of Experience

In this brief review on the outcomes of openness to experience, it should hopefully be clear that

open people's experiences represent a spectrum of cognitive, perceptual, and behavioral possibilities. It is necessary to reiterate that these findings likely do not apply to every individual high on openness to experience but is more representative of the population of highly open people. For individual people, the trait may manifest as types of openness to experience rather than the breadth of the trait.

Take the example of a classic openness to experience archetype: The artist. Kaufman et al. (2016) found that high achieving people in the arts domain tended to be higher on the Experiencing aspect of openness to experience than the Intellect aspect. Certainly, some artists may be more intellectual than others but what characterizes most artists is that they engage with aesthetic and perceptual experiences (DeYoung et al. 2012; see chapters ► [“Possible in Performance and Performing Arts”](#), and ► [“Possible in Visual Arts”](#)). Similarly, they found that high achieving people in the sciences domain tended to be higher on the Intellect aspect of openness to experience than the Experiencing. Once again, some scientists may be more aesthetically inclined than others but they are most notably characterized by their engagement with intellectual experiences (DeYoung et al. 2012).

One type of experience that is scarcely measured in contemporary openness to experience inventories is an openness to sociocultural experiences (but see McCrae 1996 and Woo et al. 2014). In Christensen et al.'s (2019) openness to experience network, they found evidence of an Open-Mindedness aspect, which was defined as “a receptiveness toward others’ ideas, values, beliefs, lifestyles, and culture” (p. 10). There is good reason to suspect that this is an important part of openness to experience types as these people may be more open to cross-cultural experiences such as trying new foods or engaging in local traditions (McCrae 1996; McCrae et al. 2005; Woo et al. 2014). There is some evidence to suggest that having cross-cultural experiences, such as studying abroad in college, may increase people's openness to experience (Martin et al. 2015).

These examples indicate that the types of experiences that people are open to facilitate

different types of possibilities. Being open to other cultures, for example, may facilitate perspective-taking (see chapter ► [“Perspective-taking”](#)) and empathy (see chapter ► [“Empathy”](#)) for those living in different parts of the world. Without that openness, a person could remain closed-off to considering others' circumstances and their worldview may not change. A sense of humor (see chapter ► [“Humor”](#)) is another example: What is a sense of humor without the openness to entertain conflicting worldviews or maintain incompatible social and semantic scripts (Attardo 1994)? Thus, a tendency to be open to an experience is a prerequisite for exploring its possibilities.

Across different types of experience, there are likely common motivational factors, such as curiosity, that contribute to seeking out new possibilities (Kashdan et al. 2018). Indeed, a drive to explore the unknown is fundamental to openness to experience (DeYoung 2013). One person might seek out complex and abstract artwork because it provides an opportunity for personal growth, while another person might be driven towards scientific discovery because they want to know the unknown (Kashdan et al. 2018). When it comes to exploring types of experience, specific characteristics of the trait (e.g., NEO-PI-3 facets) may better explain who is driven towards what (Möttus 2016). Therefore, future research on openness to experience should consider what components of the trait are contributing to the types of experiences and outcomes under study.

Summary

Openness to experience is a complex trait that represents the breadth of human experience. Its definition has become better realized over the years with contemporary models arriving at a clearer consensus. From this consensus, it is apparent that openness to experience captures an openness for all types of human experience: cognitive, perceptual, behavioral, and even sociocultural. Open people not only see the world differently but engage with it differently. Importantly, not all open people are alike, each

having their specific drives and motivations for distinct types of experience. Through these different types of experience, open people engage with the unknown and explore the edges of the possible.

Cross-References

- ▶ Aesthetics
- ▶ American Pragmatism
- ▶ Awe
- ▶ Consciousness
- ▶ Creative Mindsets
- ▶ Curiosity
- ▶ Divergent Thinking
- ▶ Emotion
- ▶ Empathy
- ▶ Humor
- ▶ Imagination
- ▶ Perspective-Taking
- ▶ Possible in Performance and Performing Arts
- ▶ Possible in Visual Arts

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Outsider Writing

Kiene Brillenburg Wurth
Comparative Literature, Utrecht University,
Utrecht, Netherlands

Abstract

Outsider art and writing is usually defined as a form of artistic or literary expression that willingly or unwillingly shuns the public sphere, as it has not been produced for commercial gain and/or public recognition, and testifies to a way of worldmaking that is other and singular, emerging out of a singular experience. This entry argues, however, that the emphasis on otherness and lack in definitions of outsider art or writing no longer holds. Outsider art and writing is just as socially conditioned as “insider” art, albeit possibly *differently* conditioned. Rather than a practice of neurologically or physically divergent creators only, I argue that outsider art or writing is a practice extending beyond professional fields, beyond immediate acclaim, celebrity, and success – whether by choice or by force.

Keywords

Consecration · Sociology of art and culture · Creativity · Neurological divergence · Outsider art · Outsider writing · Singularity · Pierre Bourdieu · Wies Janssen · Judith Scott · Heringa/Van Kalsbeek · Henry J. Darger · Emily Dickinson · Franz Kafka · Robert Walser · Babouillec

When is art, when is literature (Danto)? When do we recognize visual, sculptural, musical, and literary works as “art,” “literature,” or “music”? Is it when they appear in certain galleries and

museums, issued by distinguished publishers, and valued by certain critics and art dealers? When is creativity consecrated – attaining cultural legitimacy – and why (Bourdieu)? When is it not? In the slipstream of Pierre Bourdieu, Arthur Danto, Janice Redway, and others, these questions have framed the sociology of art and literature since the 1970s: the study of the valuation of art and literature in their respective social fields. Such fields, Bourdieu has established long ago, are fields of power, with mechanisms of inclusion and exclusion in place to adopt or marginalize artists and writers (Bourdieu). These power mechanisms – complex, indiscernible, and distributed across a range of cultural actors and institutions – render visual or verbal works possible as “art” or “literature.” The question that I raise here is: When – and why – do visual and verbal works fall outside the range of such possibility? What does visual and verbal creativity amount to in that case? In this entry, I answer these questions by focusing on so-called “outsider” art and writing. I elaborate on the concept of “outsider art,” add the dimension of outsider writing, and offer a few case studies to argue for more inclusive possibilities of “art” and “literature.” I start from the assumption that “art” and “literature” are never-neutral categories shaped in social, historical, and cultural contexts that set standards and determine values.

Amsterdam – the town where I happen to live – hosts a special museum: the *Museum of the Mind/Spirit* [*Geest*, from Germanic *Geist*, meaning both mind and spirit], with an extensive collection of outsider art. The focus of this museum is on works created by artists working with nonnormative abilities: they are physically and/or neurologically divergent. These artists may live in psychiatric institutions, or clinics for longer-term physical care, and/or produce their work in workshops and day-care centers catered to people living in such institutions. Wies Janssen, for instance, is a visual artist whose work is on display in the *Museum of the Mind*. Her work is introduced as being the expression of a “special (also implying: extraordinary) woman” [“een bijzondere vrouw”] (*Museum of the Mind*). Janssen (1954) works at Atelier Covida, a semiprofessional art center

connected to a residential- and day-care center for mentally divergent humans. As an artist, the webpage of the *Museum* stresses, Janssen reflects on moral and social injustice. She has conducted extensive research on WWI and II, seeking to render the loss, grief, and horror generated by these wars “indelible” (*Museum of the Mind*). Her painterly work on these events includes found and embroidered material. These function as indices – palpable traces – that bear witness to Janssen’s minute, persistent, and dedicated research (*Museum of the Mind*). With their striking colors, density, and often huge size, these works affect me accordingly. They are overwhelming, releasing “the past” from abstraction into a reality of things.

It is striking how the website of *Museum of the Mind*, just like a number of other publications on Janssen, frames her and her work (*Fantastike, Covida Magazine*). What is emphasized is Janssen’s private method, highlighting a certain intensity and persistence in her research, her affective potential, and her specialness as a person (*Museum of the Mind*). No titles of her works are mentioned, as is usually the case in an online catalogue. Neither is Janssen related to other artists that she may have been inspired by, or to artistic currents she may be compared to or positioned in. All this underlines her status: She is an artist, but a different *kind* of artist. Janssen practices a singular method, produces a singular art, and has not been trained in an official art academy. Such singularity marks her as an outsider artist: Her work is “other” because her affective, embodied experience is “other” (Cardinal, *Outsider Art*). As the online catalogue of *Museum of the Mind* suggests, she creates work untroubled by rules of the game, on the basis of her own intuitions or fascinations, using her own techniques and experience. She is an artist unrelated to the mainstream artworld, even though her work is – or has been – on show in Amsterdam, Havana, and Berlin.

Decades ago, Roger Cardinal coined the term “outsider art” to frame, and thus render visible in the field and study of art, work by artists such as Wies Janssen. Since its introduction, his term has in English come to replace other (and earlier) terms like art brut (Dubuffet). As Cardinal

explains, outsider art is a form of artistic expression that willingly or unwillingly shuns the “public sphere” (“Outsider Art” 1459). It is art that may not necessarily have been produced for commercial gain and/or public recognition. For Cardinal, such art is “other” insofar as it is singular: It “can be highly idiosyncratic and secretive, and reflects the individual creator’s attempt to construct a coherent, albeit strange, private world” (1459). The problem with this delineation of outsider art, in the context of the strange and private, is that its appreciation hinges on (what Eve Kosofsky Sedgwick calls) the presence of lack (Sedgwick): on a doing, thinking, seeing, or feeling “otherwise” that is interesting artistically *for that reason*. For instance, Janssen’s work has been said to “render visible her inner world”: it has value in so far as it reveals otherwise inaccessible experiences (*Covida*). It is art, yet it is exhibited in separate spaces dedicated to works by other artists who are mentally and/or physically divergent and who work from within a more isolated experience. Still, as sculptors like Judith Scott (1943–2005) illustrate, such works need not remain “outside.” Scott’s work characteristically involves wrapping found objects in colored yarns and thread. Her method has profoundly influenced other artists – such as the artist duo Heringa/VanKalsbeek – and has gained worldwide recognition since 1999 (MacGregor, Heringa/Van Kalsbeek). This is when she cast off her outsider status to become a celebrated contemporary artist. If there is “outsider” art, there is also “insider” art. Or rather, “insider” art is the unspoken, invisible norm against which “outsider” art is pitted as an exception. Speaking of “outsider” art is thus implicitly to think in terms of a value hierarchy, of a norm and its other. As fruitful as Cardinal’s concept has been to highlight varieties of artistic production outside of the official art world, it also reinforces a binary (and a mechanism of exclusion) it was meant to redress. Moreover, with its emphasis on isolation, the idea of “outsider” art fails to capture the *social* circumstances that inform the work of “outsider” artists: Their exclusion does not occur in a vacuum, and neither does their training.

Outsider art has in recent years come to include all kinds of artistic forms, rather than only artists

who have had no formal training and work from nonnormative perspectives. Thus, outsider art now also includes pop culture, street art (graffiti), and other forms that – in one way or another – diverge from “official” artistic practice. Significantly, however, while a lot of research has been done on these divergent practices as outsider art, outsider *writing* has never turned into an official concept, or into a robust archival presence. Yet, many writers fit the concept. Writer-painters like the American Henry Darger (1892–1973) easily come to mind, who – largely self-taught and a hospital custodian for the greater part of his adult life – lived with the trauma of years of abuse and maltreatment in the Illinois Asylum for Feeble-Minded Children, from which he eventually escaped. An inventory of his writings, *The Writings of Henry J. Darger: A Catalogue Raisonné and Reader's Guide*, was prepared by John MacGregor and Betsey Wells Farber in 2001 for the Contemporary Center of the American Museum of Folk art (Macgregor). It contains his epic and illuminated manuscript *The Story of the Vivian Girls, in What is Known as the Realms of the Unreal, of the Glandeco-Angelinian War Storm Caused by the Child Slave Rebellion* – which, containing more than 15,000 pages, is reportedly the largest work of fantasy fiction ever written (Yu).

Instead of a writing by neurologically divergent creators only, I would propose that outsider writing, or outsider literature, is a writing beyond a professional field, beyond immediate acclaim, competition, celebrity, and success – whether by choice or by force. Emily Dickinson is a famous example, like William Blake or Franz Kafka, though also an atypical one as outsider writers (like outsider artists) are not that likely to end up in literary canons worldwide. Be that as it may, the difference between outsider and insider writers/writing should ideally not be seen in terms of a binary opposition, but more as a continuum: “outsider” and “insider” are two poles on that continuum with many variations in-between.

These variations could not only include zine- and other forms of life writing (Poletti), prison (life) writing (Elsinore-Bennu Think Tank), and refugee (life) writing (refugeetales.org), but also graphic medicine and writers working from neuro-divergent perspectives, such as Robert Walser and his miniature writings created, in part, during his 25-year stay in mental institutions (Walser) or Babouillec’s *Voyage au centre d’un cerveau d’autiste* (2021), written as the account of an intelligent woman – Héléne Nicholas – unable to communicate her thoughts and ideas to others due to severe autism (Shaw). Yet such an incapacity to communicate may also have other reasons. For one, imaginative thinkers in the global south may not have the means to write (ranging from education to screens, or even pen and paper) so that their imaginative worlds cannot be recorded and published – and the same applies to refugees, indefinitely detained, or those imprisoned for life. Their work, their writing, is not possible as they are barred from certain rights and resources. Artists and writers are disprivileged in all sorts of ways, blocking their entry into professional fields, and as such remaining “outsiders.” This is why I emphasize “by force or choice” in my definition of outsider art and writing as a practice extending beyond what museums, publishers, critics, canons, or other gatekeepers offer. Who gets to occupy a space of creation, who does not? Who gets to be seen or heard? The relevance of the term “outsider art/writing” is, accordingly, to remind us of the dynamic between private and professional fields: a dynamic where art and literature may (not) become possible as alternative and imaginative ways of worldmaking.

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The Parable Proxy of Possibilities

Paulina Larocca
University of Technology Sydney, Ultimo,
Australia

Abstract

The Parable Proxy of Possibilities is an innovation framework that enables organizations to safely interrogate the perspectives that materialize and maintain the status quo to generate system-wide transformation. The status quo is a convention that provides the knowledge needed to navigate and sustain culture, creating meaningful relationships that enhance people's emotional and physical well-being (Lakoff and Johnson 2008). However, it also suppresses innovation by stifling perspectives that question its truth. Culture gives society a shared meaning that makes its members feel emotionally centered and secure as it anchors them in the world. Culture creates its narratives with the myths and metaphors that materialize as its objective reality. Without the sense-making of culture, people feel displaced, so they suppress perspectives that can contradict the status quo – their truth. However, the status quo is not a sacred state. It is a metaphor for a culture's collective agreement of reality that limits knowledge production by excluding other epistemologies. Today, society is in desperate

need of new ways of thinking about the planet's social and climatic challenges. It needs to increase the resilience of the status quo to embrace new knowledge without its members feeling displaced. The Parable Proxy of Possibilities is a framework to help new perspectives be incorporated into the status quo to engender more possibilities. It does this by demonstrating the *similar differences* (Bohm 2004, p. 60) of others' perspectives to enable new relationships to be discerned to enlighten and safely expand the worldview of the status quo. In this light, as the name reflects, the Parable Proxy of Possibilities is a creative insights generator rather than a creative problem-solving process model.

Keywords

Creative insights · Status quo · Imagination · Perspectives · Possibilities · Diversity · Culture · Creative problem-solving · Innovation

The Parable Proxy of Possibilities is an innovation framework designed to help people and organizations materialize and sustain transformational system change. It does this by providing a safe mechanism to re-evaluate its cultural knowledge to shift the center of its status quo. It incorporates tenets from Confucianism, ancient Greek mythology, Celticism, Aboriginal Australianisms and marries it with the status quo to demonstrate the

similar differences of the knowledge systems. By uniting these diverse worldviews into one framework, new relationships can be discerned, providing more ways to work with knowledge. This approach can enrich, enlighten and expand the potential of the status quo.

Creative insights start with the “perceptual discrimination of similar *differences* and *different similarities*” (Bohm 2004, p. 60) to create new relationships that enrich a culture’s understanding of its world. An example is Einstein’s general theory of relativity that altered the course of the status quo. A significant factor in developing his theory was his isolation from academia – he was working at the Swiss Patent Office at the time. This separation from the status quo enabled him to freely combine domain-specific knowledge to discern new relationships (Clark 1973).

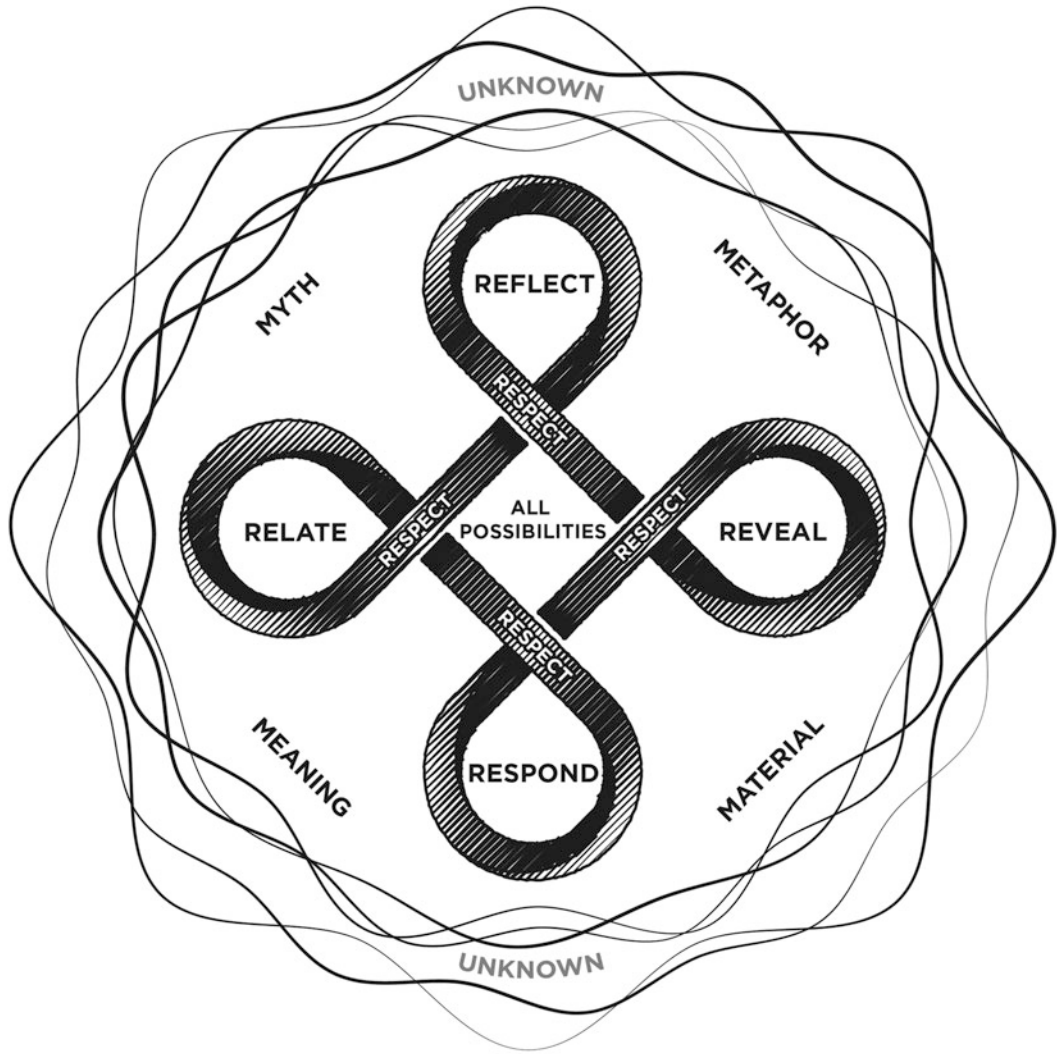
Einstein was a trained scientist who pursued a university career after graduation but was never employed. By the time he published his ideas, he had accepted a nonacademic career path. So, there was no longer any social risk in posing a radically new idea as he was not part of the scientific establishment. Einstein was, however, a member of the status quo with his education, promising career, and marriage, so his creativity was a product of his culture (Glăveanu 2010). His patent office training helped him describe complex phenomena with accessible metaphors, which contributed to his ideas catching on. “Einstein’s relativity of time is a reform in semantics, not in metaphysics” (Clark 1973, p. 62). Freedom from academia’s domain-specific ideals enabled him to perceive new, undiscerned relationships and characterize them as *similar differences* (Bohm 2004). After his theory was published, he became a university professor. His ideas were integrated into the status quo creating new knowledge that has exponentially increased the number of possibilities taken for granted today.

Without the creative insight generated by Einstein’s breakthroughs, the world would be greatly impoverished. Diversity should not be a tick box exercise that allows others’ perspectives. The status quo is not structured to hear its perspective and respect how it works with knowledge. As Csikszentmihalyi (1997) said: “We

have repeatedly seen, most creative achievements depend on making connections among disparate domains” (p. 338). However, a culture or domain’s shared language tends to screen out those who do not speak the codes, limiting its potential and stifling its growth. Fortunately, Einstein had not sought the experts in the field’s approval before actualizing his theories. “We shouldn’t turn perspectival worlds from an ontological reality into a normative ideal” (Glăveanu 2020, p. 95). Education and career specialization excludes diversity with its closed knowledge systems. In this way, a culture maintains its status quo. However, limiting possibilities and perspectives also makes organizations susceptible to destabilization. Disruption does not need sanctioning from the status quo to occur.

However, we should not consider Einstein a lone genius operating outside his culture. Instead, his creative insights were a discontinuous break from his culture’s continuity of thought (Weisberg 2006). Situating his creative insights as *similar differences* enabled the status quo to accept his ideas without feeling threatened. By demonstrating the complementary nature of his breakthrough, the status quo’s narrative could incorporate the insights to create new orders of knowledge. “We tend to think of things, not relationships, as the heart of reality. But most often, the opposite is true,” says theoretical physicist Stephon Alexander (as cited in Cole 2019). Respecting and augmenting the current myths and metaphors to create new orders of thought can be a more effective strategy for diversity than replacing one ideology with another’s. It maintains the safety and security of the status quo while stretching what it thinks is possible to create more potential.

Likewise, the Parable Proxy of Possibilities (PPP) does not seek to homogenize or create false harmonies among diverse perspectives as this does not lead to creative insights. Instead, the PPP reveals new relationships by highlighting *similar differences* to lead to new orders of thinking that can safely enlarge the status quo. The PPP also facilitates creative insights to generate discontinuous breaks in the continuity of culture to increase the potential of the status quo. That is



The Parable Proxy of Possibilities, Fig. 1 The Parable Proxy of Possibilities

why Fig. 1: *The Parable Proxy of Possibilities* has a diamond-shaped heart that embodies *all possibilities* while pumping the lifeblood of *respect* throughout its arterial network.

The notion of *respect* is a simple but profoundly deep concept because it does not judge but seeks to understand, and it cannot be separated from the PPP's heart of *all possibilities*. The two are organs of one system because denying another's perspective does not mean it ceases to exist. It just limits its ability to materialize in a way that can benefit the status quo. Using *respect* instead of the more

familiar concept of *deferring judgment* from the Creative Problem Solving (CPS) methodology was deliberate. In CPS, deferring judgment means evaluation is held later to “entertain” (Puccio et al. 2012, p. 51) alternatives that could be novel and useful challenges to the status quo (Puccio et al. 2012; Runco and Jaeger 2012). This approach has its issues by retaining the concept of judgment and enshrining the status quo as the standard to assess the value of new concepts. In doing so, this approach suppresses epistemological knowledge that could enlarge the potential of the status quo.

Instead, the PPP uses the concept of *respect* from an Australian Indigenous Knowledge system, which “accepts that diversity is the basis of creativity and adaptation; therefore, it does not strive to convince others to become the same” (Sheehan 2011, p. 69). The PPP’s lifeblood is *respect* because it embodies freedom from the status quo while maintaining its relationship. It does not subscribe to replacing one ideology with another, reinforcing a win/lose mentality. When that mindset is deployed, losses are characterized as having a greater psychological weight, so people will work harder to avoid them, even if it prevents them from realizing other possibilities that may be better in the long term (Kahneman 2011). “How we imagine the world determines what we think important in it, what we select for our attention” (Samuel and Thompson 2021, p. 13).

The usage of the status quo as a cultural balance sheet has real-world consequences that can create inequity (Buchanan 2004). It reflects what a culture values (and does not), which is treated as truth and materialized accordingly as an objective reality (Lakoff and Johnson 2008). Typically, society treats *its* beliefs as the truth, *yours* as a mistaken conviction, and *theirs* as a myth (Pettigrew 1979).

However, this reliance on the status quo for security promotes short-term thinking as it is not that stable. Just look at the rise of cancel culture and the #metoo movement. Condoned behaviors accepted as an inherent part of an organization’s culture can now make a highly ranked member a social pariah.

Further, power imbalances that are advantageous to the status quo in the short term tend to converge with the “disadvantaged” and “marginalized” over time. As an example, look at the environmental damage caused by industry. In the short term, profits and cheap consumer goods seem more important. However, when a culture embodies the meta-perspective of *respect*, which treats *all possibilities* with reverence, it can see that its interests are much more aligned than it may, at first, realize. Society finds that it cannot destroy someone else’s

environment without damaging its own, with severe ramifications for its health, security, and well-being.

People rely on the status quo for their safety, security, health, and well-being. However, when a culture stifles its growth by not *respecting* another’s epistemology, it hastens its collapse by being willfully blind to the unintended consequences represented by *all possibilities*. *All possibilities* remind people that a social collapse is possible without *respect*, and denying it does not make it less probable. Reality, when it is mistaken for truth, is unstable. “Culture is epistemological because it makes our experience understandable, and makes us feel as if we know our world and our places in it” (Demerath 2002, p. 208).

The continued usage of the status quo as a cultural balance sheet materializes as a resistance to change characterized by winners and losers, decreasing its potential. As Kahneman (2011, p. 305) said:

In human affairs, the same simple rule explains much of what happens when institutions attempt to reform themselves, in “reorganizations” and “restructuring” of companies, and in efforts to rationalize a bureaucracy, simplify the tax code, or reduce medical costs. As initially conceived plans for reform almost always produce many winners and some losers while achieving an overall improvement. If the affected parties have any political influence, however, potential losers will be more active and determined than potential winners; the outcome will be biased in their favor and inevitably more expensive and less effective than initially planned,

When the status quo disrespects others’ perspectives by denying their *similar differences*, it puts its safety in danger. An organization can limit its potential with its inability to respectfully listen to diverse perspectives by inhibiting the generation of creative insights that could enrich it with new orders of knowledge.

However, disrespecting others’ perspectives by not seriously considering their views as a valid truth does not prevent any of the unexpected consequences contained in *all possibilities* from coming to fruition. Just look at the disruption caused by COVID-19, which was not wholly

unpredicted. It was an incredibly destabilizing event with devastating consequences that also demonstrated the fragility of the state of the status quo and the need for greater resiliency.

Disrespecting others' perspectives decreases an organization's resiliency. It cannot assume that its future is continuous from its present. When an organization is rigid in the face of inevitable change, it becomes brittle, not flexible (Aerts et al. 2012). However, organizations fear chaos, so they struggle to embrace the notion of discontinuous change. While healthy systems that embody change and chaos are more resilient and adaptable. "New structures emerge not in changing the state of equilibrium but in the state far from equilibrium. It is the fluctuations that enable a system to move from one state to another" (Aerts et al. 2012, p. 109). Stability, when used in systems thinking, contains a "hidden assumption of linearity, associated with predictability (return to equilibrium state after disturbance)" (p. 112). The original meaning came from the concept of "ultrastability" (p. 108), which means a system is adaptive and flexible to retain its overall structure. A healthy system uses ultrastability to create possibilities by metamorphosing with chaos to make itself more robust.

When an organization labels diverse people as "marginalized" and "disadvantaged," it is disrespectful because these labels act as a proxy for the truth (Lakoff and Johnson 2008). They can also, unintentionally, suggest and permit people so labeled to be treated like that. It is difficult for people classified as marginalized to feel they can share their perspectives perpetuating the issue (Hughes 2016). Likewise, it is hard to hear marginalized voices as their disadvantaged perspective is labeled as different from the status quo.

The more an organization accepts these categorizations like "marginalized" and "disadvantaged" as part of their status quo, the more they become entrenched in that perspective and resistant to contradictory ideas. "The more we know about something, the more gratified we are by reinforcements of that knowledge, and the more upset we are by contradictions" (Demerath 2002, p. 209). This way of thinking leads to a suppression of perspectives

that could enlighten the organization because it seemingly threatens the status quo. These "marginalized" perspectives are cast as different, e.g., dangerous, because their views lack the metaphorical scaffolding that demonstrates their relational similarities. Without this, their perspective is a threat when it could be helping enlighten the organization to create new possibilities. As Kahneman (2011) said, if the "losers" have clout, they will use it to stymie progress – limiting potential.

Society fears diversity because it introduces complexity, conflict, and chaos (Bassett-Jones 2005), while not fully realizing that their metaphorical characterization of events contributes to how they experience it. When they say they are *divided* or *conflicted*, it becomes their reality (Lakoff and Johnson 2008). "The language of argument is not poetic, fanciful, or rhetorical; it is literal. We talk about arguments that way because we conceive of them that way – and act according to the way we conceive of things" (Lakoff and Johnson 2008, p. 5).

However, in Greek mythology, chaos is undifferentiated potential (Wheeler 1995), meaning diversity is part and parcel of harmony. Ancient Greek mythology characterizes chaos as a force *of* nature as in one with it. Similarly, in ancient Chinese philosophy, "a harmonious world must be a diverse world. This is so because a healthy and prosperous world relies on its diverse things to go together" (Li 2006, p. 585). *All possibilities* at the heart of the PPP framework embodies all these epistemologies as related concepts with *similar differences*.

The PPP framework does not seek to solve problems by blending or suppressing epistemologies because it limits possibilities. Instead, it generates creative insights by recognizing that the possible is not in an either/or relationship with the impossible. The two are in a dynamic dance, and the gap widens or narrows depending on the perspective. When the two are closer, it is easier to discern that they are *different-similar* perspectives of the same system. Working respectfully *with* the status quo enables the generation of creative insights to affect transformational system change.

Limitations of the Creative Problem-Solving Process Models

Problem definition, or how an issue is framed, suggests it has a solution and steps to solve it (Bardwell 1991). That is not an issue per se, as all perspectives reveal and hide information (Glăveanu 2020). “Being able to redefine or reframe a problem and to explore the ‘problem space’ can help broaden the range of alternatives and solutions examined” (Bardwell 1991, p. 603). However, categorizing challenges as “problems” and outcomes as “solutions” can obscure its metaphorical use and mythical connotations. It implies that the problem-solver can control their environment and materialize outcomes that fix the system. However, since the system is interconnected, it cannot be changed without altering the whole. These changes will then generate unintended consequences that will be experienced differently depending on one’s perspective. A problem solved, like eliminating environmental waste, is an issue for someone else when it appears in their backyard.

Compounding the problem/solution paradigm’s limitations is that “people tend to solve problems in ways that fit into their preexisting maps; they do what they did before. At its best, this means one has an adequate map for dealing with a new situation. Unfortunately, this also means that ... more effective options are overlooked” (Bardwell 1991, p. 605). The problem/solution paradigm combined with the creativity of the solution being assessed in terms of its novelty and usefulness versus the status quo limits possibilities. It also can create inequities by not considering the consequences of the “solutions” apart from the perspective of the status quo. There will always be unintended consequences. However, that does not mean that an organization can willfully ignore the consequences of its actions on others.

That is why the PPP encourages the embodiment of as many different perspectives as possible. It does this with its use of the Celtic four-leaf clover device, representing the embodiment of knowledge as in Fig. 1: *The Parable Proxy of Possibilities*. The Celtic knot flows in many

directions, even reversing and crossing paths to form a pattern. Like how knowledge flows, as it creates new *meanings* from its *myths* and *metaphors* to *materialize* new realities. The Celtic knot also represents the “boundlessness of the imagination to the order of reality” (Heinz 2008, p. 14).

The PPP creates knowledge bridges between epistemologies by co-creating the flow of boundless imagination to generate new myths and metaphors to enhance the status quo. It creates an embodied experience with the Celtic knot symbolizing a human body. The head is represented by *reflect* and is the mind of culture using *myths* and *metaphors* to conceptualize its world. The left arm reaches into the past to illustrate how a society *relates* to knowledge, how it uses *myths* to create *meaning* it treats as truth. Simultaneously, the right arm reaches for the future to *reveal* what society is becoming with its changing *metaphors* that are *materialized*. The feet *respond* grounded in a *material* reality that has a shared *meaning*. The outermost rings represent the *unknown* forces that influence the system but cannot be detected from the perspective of the status quo.

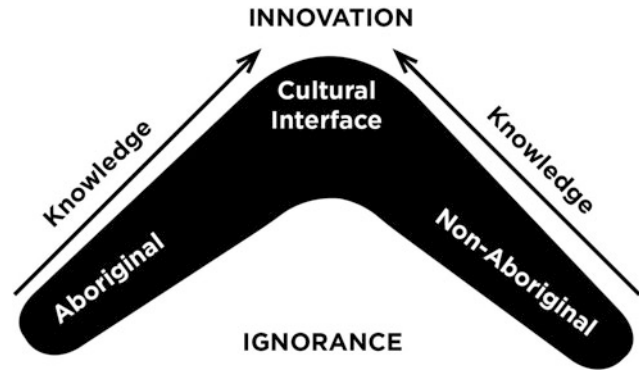
The realizations gained embodying the PPP will encourage more equitable outcomes. By internalizing another’s perspective, an organization can discern relationships that can help expand its potential. Meaning acknowledging and even privileging another perspective cannot take something from the status quo; it can only add possibilities that enable transformational change. Indeed, more than additive, new perspectives could be multiplicative.

Though a person cannot objectively know what it is like to be another being, “at present we are completely unequipped to think about the subjective character of experience without relying on imagination” (Nagel 1974, p. 449). Organizations still have an ethical obligation to try.

The PPP recognizes a “higher level of knowledge” – spiritually and intellectually – than the status quo (Yunkaporta 2009). The status quo concerns what exists, which does not have a linear relationship with what will exist. As Fig. 2: *Boomerang Interface of Cultural Interface*

The Parable Proxy of Possibilities,

Fig. 2 Boomerang Interface of Cultural Interface Knowledge



Knowledge demonstrates, a society's understanding increases when it perceives its *different similarities* rather than just its differences. These insights enable learning “*through* culture, not about culture,” with the new perspectives getting “*built in*, not bolted on” (p. 4).

The status quo is an emergent social state that reflects a culture's values. It is a perspective sustained by its myths and metaphors. However, healthy systems are chaotic, requiring resilience and adaptability (Aerts et al. 2012), including responding to change and innovation. When a culture undergoes a transmutation, like in the example of Einstein, its myths and metaphors move in sync, creating an embodied perspective to anchor it in the newly formed status quo. In this light, the PPP is a framework for generating new perspectives to increase potential by enabling an organization to safely *alter* the status quo rather than a creative problem-solving process model that produces novel and useful ideas *versus* the status quo (Runco and Jaeger 2012; Stein 1953). “Prominent ideas cannot die until the problems that arise within them has been resolved” (Samuel and Thompson 2021, p. 15).

That is why the PPP preferences imagination over creativity. It encompasses an expansive array of perspectives, and it is not as constrained by social consensus that can limit possibilities as epitomized by the status quo.

The Importance of Imagination

Since the PPP is powered by imagination, it is worth clarifying this concept as it has received

less research attention than creativity. Runco and Pritzker (2020, p. 637) define it thus:

In the psychological research ‘imagination’ is becoming a broader term that encompasses the multi-faceted capacity to transcend our current time, place and/or circumstances to think about what might have been, plan and anticipate the future, create fictional worlds, become absorbed in the narratives created by others, and consider remote and close alternatives to actual experiences. With this definition, imagination includes everyday mundane thoughts (e.g., plans for dinner), as well as the creative insights that lead to progress in art and science. This definition also distinguishes imagination from imagery, with the latter being a tool of the imagination rather than equated with it.

Imagination is not the same as *imaginary* because “imaginative processes have real world effects on our behaviour” (p. 637). In other words, imagination carries with it the potential for action and actualization while the imaginary is trapped in the abstract. Nor is imagination just the domain of children. Strategizing and remembering are all done using imagination. People pretend when they evaluate options by converting them into narratives that run through their minds. Fantasy, pretending, and storytelling are vital and ageless undertakings that enrich cognitive capacities.

In these “postnormal times” characterized by the 3Cs: complexity, chaos, and contradictions, Sardar (2010, p. 443) argues that society needs imagination more than ever.

The most important ingredients for coping with postnormal times are imagination and creativity. Why? Because we have no other way of dealing with complexity, contradictions and chaos. Imagination is the main tool, indeed I would suggest the only tool, which takes us from simple reasoned

analysis to higher synthesis. While imagination is intangible, it creates and shapes our reality; while a mental tool, it affects our behaviour and expectations. We will have to imagine our way out of the postnormal times. The kind of futures we imagine beyond postnormal times would depend on the quality of our imagination. Given that our imagination is embedded and limited to our own culture, we will have to unleash a broad spectrum of imaginations from the rich diversity of human cultures and multiple ways of imagining alternatives to conventional, orthodox ways of being and doing.

However, Vygotsky's (2004) "first law of the imagination" states that the ability to be creative depends on the "richness and variety" (p. 14) of a person's experiences because that powers their imagination. The richer the person's range of experiences, the more they can indulge in fantasy, embody stretching narratives, and construct complex and layered storylines. The PPP's design reflects this by providing a structured way of creating new storylines to help users continuously shift their perspectives, regardless of the richness of their experiences. Its use of narrative devices helps to question what "they know" to create what does not yet exist. These scenarios can be realistic or fantastical, probable, or even impossible – it does not matter – because it is a matter of perspective. By imagining it, it helps materialize it to close the gap between the possible and impossible.

That is why the PPP is a creative insight generating framework rather than a creative problem-solving process model. By approaching complex challenges this way, the PPP overcomes significant drawbacks of creative problem-solving process models – their narrow perspectives and use of the status quo limiting innovation.

Storytelling

The PPP embodies the wisdom of a multitude of perspectives to continuously generate more possibilities and safely brings them into being with storytelling, which is arguably the most subversive communication medium because it is accepted unquestioningly. "Any writer worth his/her hire knows that all writing, one way or another, is subversive. It is guerrilla warfare

against the status quo" (Ellison 1997, p. 247). Stories provide coherence to events that are recast as a truth that enables an organization to survive and thrive (Lakoff and Johnson 2008). Storytelling is weaved through every cultural medium because it is how society constructs meaning.

The PPP is called a framework, but it is alive and metabolizing its culture's knowledge – the stories that create reality. These narratives give an organization coherence, connection, and kinship. Hence, the PPP has a 3D and hand-drawn element; it emphasizes that it is anchored and embodied.

The inclusion of the word parable in the *Parable Proxy of Possibilities* borrows from the allegorical literature to emphasize that it is a storytelling framework with a moral compass – the spirit of respect. It is not a pre-ordained morality; it is created in the spirit of Confucian philosophy where there is no predetermined truth, so users need to take personal accountability for how they move forward in the world (Li 2006).

The PPP creates narratives using perspectives and storytelling devices like myths and *metaphors* working with the imagination "as a form of enrichment or expansion, of one's experience and understanding of the world" (Zittoun and Cerchia 2013, p. 2). The PPP enriches a culture's potential by embodying a range of perspectives to create relational bridges to the myths and metaphors of the status quo to materialize new possibilities. Therefore, it respects rituals and traditions as well as what is novel and useful (Runco and Jaeger 2012; Stein 1953) because both can engender an "experiential gestalt" (Lakoff and Johnson 2008, p. 234) that creates a coherence through actions to concretize a new reality.

Conclusions

The PPP is created from the conviction that humankind needs to integrate new perspectives to engender a more inclusive and respectful embodiment of this culture's status quo. This culture's current narratives of the future reinforce a win/lose, either/or mentality (Lamp 2020). It contributes to society losing sight that we are

interconnected and dependent. The world is pregnant with possibilities; however, the languaging of today determines what will be available tomorrow. The status quo suffers from a lack of diverse perspectives needed to materialize more opportunities for transformational change. Instead, it appears we are destined for an extension of the present state.

Narratives “contribute to the perspectival nature of reality and open it up to the possible” (Glăveanu 2020, p. 81). Therefore, it is essential that society critically examine how it categorizes knowledge. Instead of characterizing it as different, society could view new perspectives as having *different similarities* or a *similarity of the differences* (Bohm 2004, pp. 60–61). This deliberate languaging allows a culture to play with diversity while respectfully creating discriminations that contribute to knowledge that deepens its understanding.

The PPP is created from the conviction that humankind needs to integrate new perspectives to engender a more inclusive and respectful embodiment of the status quo. It can alter the elaboration of this culture’s current languaging from reinforcing the structures that support and maintain the systems of power (Pettigrew 1979) to languaging that materializes a more enlightened status quo with more inclusive myths and metaphors to engender more possibilities. In this way, the PPP acts as narrative pedagogy that can help shift the relationships between seemingly different groups onto a higher plane.

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Paradox Mindset

Ryszard Praszkiar¹ and Paige Munnik²

¹Institute for Social Studies, University of Warsaw, Warszawa, Poland

²School of Psychology, University of Buckingham, Buckingham, UK

Abstract

This entry presents the positive function of embracing contradictions. It shows that the tension induced by the consideration of simultaneous contradictory ideas may actually be positive, especially in the field of creativity.

In the literature, there appear to be several concepts related or identical to the idea of embracing contradictions: conceptual blending, the paradox mindset, and Janusian thinking. Herein, some examples of contradictions represented by creative individuals are presented. Moreover, it is delineated how the paradox mindset may augment creativity and divergent thinking.

Following this, the entry introduces ways of measuring Janusian thinking and reports the

validation process of a proposed questionnaire. Finally, it concludes with outlining possible future studies and applications in practice.

Keywords

Paradox mindset · Contradictions · Janusian thinking · Conceptual blending · Creativity · Embracing contradictions · Divergent thinking

Introduction

Aristotle gave us, on the one hand, the law on noncontradiction (LNC), which states that opposite assertions cannot be true at the same time; on the other hand, he left numerous paradoxes in his wake, e.g., in a race. In a race, “the quickest runner can never overtake the slowest, since the pursuer must first reach the point whence the pursued started, so that the slower must always hold a lead.”¹ Another example is that if everything that exists has a place, that place too will have a place, and so on ad infinitum. At the meta-level, Aristotle's heritage seems to be a message: The LNC may coexist, in a person's mind, with paradoxes and contradictions.

Following this message, this article explores both approaches: Positing that contradictions generate unpleasant tension that needs to be reduced, and the opposite, arguing that contradictions generate constructive tension to be embraced by individuals.

Cognitive Dissonance: Reducing Negative Tension

The phenomenon of cognitive dissonance (CD) (Festinger 1957; Festinger et al. 2009) is considered to be one of the most influential theories in psychology. It posits that making a new choice that is not consistent with prior beliefs or attitudes kindles CD, which is experienced as unpleasant and is hence reduced through various mechanisms, e.g., rationalization, so that one's prior beliefs are altered so as to be more consistent with their actions.

¹Aristotle, Physics VI:9, 239b15.

Leon Festinger (1957) stated that CD occurs when there is an uncomfortable tension between two or more beliefs or concepts that are held simultaneously. Additionally, most people want to perceive themselves as cohesive, and inconsistencies would contradict their self-image. In this vein, one restructures their internal beliefs in order to reduce such CD and to reach a state of internal cohesiveness on this new level (Mischel 1969, 1973).

Positive Role of Tension Evoked by Contradictions

As written by Johann Wolfgang von Goethe, “What we agree with leaves us inactive, but contradiction makes us productive.” This means that it is the very process of dealing with contradictions that fosters productivity, which energizes and inspires an individual to perform under tension. This is also reflected in Friedrich Nietzsche’s *Twilight of the Idols*: “One is fruitful only at the cost of being rich in contradictions.”

It is not only philosophers and writers who have discovered the importance of contradictions. Similar voices also come from business, e.g., Joel Gascoigne, a startup founder, said that the success of a new venture might be dependent on a willingness to embrace inconsistency and to contradict oneself.² For example, Rothenberg (2011) showed that among the winners of the Nobel Prize, the common process is actively and simultaneously conceiving and holding multiple opposites. Additionally, leaders who embrace a paradox mindset are more likely to enhance the productivity of their workforce (Liu et al. 2019).

Another example is Jeff Bezos, an entrepreneur, investor, and computer scientist best known as the founding CEO of Amazon, who said that people who are usually right frequently change their minds, and that consistency of thought is not at all a particularly positive trait. Indeed, he encourages leaders to challenge

themselves with ideas that contradict their previously held convictions.³

Moreover, Peter Senge (2006) described constructive tension, also called creative tension, as the “gap between vision and current reality,” where possibility and constraint meet, which is vital to create peak-performing organizations.

Indeed, it has been shown many times that tension can create focus, heightened activity, and maximum productivity (McGoff 2017).

An Overview of Embracing Contradictions

A paradox mindset involves individuals accepting, embracing, and being energized by the tension caused by contradictory ideas. The acceptance of a paradox mindset can help people enhance creative drive (Miron-Spektor et al. 2017; Liu et al. 2019). In this sense, a paradox has to be accepted, adjusted to, and made sense of, both in life and at work, as well as in the community and among nations (Handy 1995). Below is an overview of the various approaches to embracing contradictions.

Conceptual Blending

Conceptual blending is a form of novel idea creation based on combining two concepts (Oakley 1998). It is a fundamental instrument of the everyday mind, used in the basic construal of all realities, from the social to the scientific (Turner 1997, p. 93). Elements and vital relations from diverse scenarios are “blended” in a subconscious process (Fauconnier and Turner 2003).

Conceptual blending is a cognitive aptitude enabling performing a variety of functions – from event integration, conceptual change, and metaphor projection to humor, literary invention (Oakley 1998). An example of conceptual blending is the conceptual metaphor theory (CMT), which states that metaphors are a conceptual – rather than a purely linguistic –

² <https://buffer.com/resources/the-habits-of-successful-people-be-inconsistent> (accessed 20 March 2021)

³ <https://signalvnoise.com/posts/3289-some-advice-from-jeff-bezos> (accessed 20 March 2021)

phenomenon (Grady et al. 1999; Handl and Schmid 2011).

An important type of conceptual blending is divergent thinking, i.e., connecting concepts, even if they are disparate and unrelated – a kind of creative cognitive processing (Guilford 1950; Runco 2007). Indeed, divergent thinking is an indicator of creative potential (Runco and Acar 2012).

This article focuses on the kind of conceptual blending that relates to merging contradictory concepts, called the paradox mindset or Janusian thinking.

Paradox Mindset

A paradox mindset indicates the extent to which an individual embraces and is energized by tension. For employees, a paradox mindset has a positive impact on their innovativeness. For example, leaders' paradox mindset is positively associated with employees' innovative work behaviors (Liu et al. 2019).

Individuals that possess a paradox mindset (i.e., those who accept and are energized by tension) respond to a contradictory situation by developing a sense of optimism about being able to successfully work through said situation. A paradox mindset is also associated with determination and persistence, even if stuck or failing (Sleesman 2019).

Janusian Thinking

"Janusian thinking" is a process named after Janus, a Roman god who has two faces, each looking in the opposite direction. Janusian thinking involves the ability to imagine two opposites or contradictory ideas, concepts, or images existing simultaneously (Michalko 2012). It may also be seen as a process that allows an individual to think paradoxically. Not many people are able to engage in Janusian thinking, because it requires the ability to see the two sides of a paradox in order to transcend it and to find the optimal "solution"; instead, the majority of people are typically only able to perceive a single side (Mostovitz et al. 2008).

The analysis of the creative work of contemporary, and of those of past years, outstanding

scientists indicates the significant role in scientific invention of Janusian thinking, i.e., actively conceiving multiple opposites or antitheses simultaneously (Rothenberg 1971, 2011). This cognitive process is related to Einstein's description of his discovery of the general theory of relativity: For example, Einstein described one of his thoughts in the development of the general theory of relativity, i.e., finding out that a man falling from the top of a house was both in rest (relatively) and in motion at the same time (Michalko 2012; Rothenberg 2015).

Paradox Mindset and Creativity

The paradox mindset and contradictions can impact previously held assumptions, allowing to perceive a situation from a whole new perspective. This is essential in creativity, often referred to as overcoming an impasse, as creative acts, particularly moments of inspiration or "a-ha" moments, deliver a feeling of joy, which in turn stimulates the brain plasticity essential for creativity (Pellis and Pellis 2009).

Indeed, creative people are well known to embrace contradictions and paradoxes (Miron-Spektor et al. 2011; Miron-Spektor and Erez 2019). For instance, Miron-Spektor et al. (2011) and Miron-Spektor and Erez (2019) demonstrated that those who are better able to hold contradictory ideas are more likely to be "outside the box" thinkers, a trait that is often cited as essential for creative endeavors. Moreover, Miron-Spektor et al. (2011) showed that those who are able to reflect on opposing ideas are more creative than those only capable of considering a single concept.

Generating creative ideas by exploring opposite solutions is also called divergent thinking. Divergent thinking remains the most frequently used indicator of creativity in both creativity research and educational practice (Baer 1993).

An overall analysis of the data regarding the creative work of contemporary and past outstanding scientists indicates the significant role of the Janusian process in scientific creation

(i.e., actively conceiving multiple opposites or antitheses simultaneously). This process is complex, involving four phases that develop over extended periods of time: (1) motivation to create, (2) deviation or separation, (3) simultaneous opposition or antitheses, and (4) construction of the theory, discovery, or experiment (Rothenberg 2011).

Some posit that to be creative, one has to continuously contradict oneself using the following mechanisms:

- Having knowledge but often relying on intuition instead
- Seeing unexpected and unusual connections while remaining sane and not having a mental disorder
- Working hard, but also spending time doing nothing
- Generating many ideas, most of which are useless
- Looking at the same thing as everyone else, yet seeing something different
- Desiring success, but learning how to fail (and learning from failures)
- Being persistent but not stubborn
- Listening to experts, but knowing how to disregard them (von Oech 2008)

Moreover, people who are creative tend to have “antithetical traits,” meaning that they possess traits that are in direct opposition, such as the following:

- They have a great deal of physical energy, but are often quiet and at rest
- They enjoy and practice playfulness, but also operate under strict discipline
- They alternate between imagination and fantasy at one end and a rooted sense of reality at the other
- They merge opposite tendencies on the continuum between extroversion and introversion (which is unusual, as psychologists hold that being either an extrovert or introvert is a stable personality trait)
- They are remarkably humble and proud at the same time

- They have both a rebellious streak and a strong culture of basic (traditional) points of reference
- They are both passionate and objective about their work (Csikszentmihályi 1997)

Influence of Contradictions Questionnaire (ICQ)

In order to investigate how individuals feel about holding conflicting concepts, we created and tested the Influence of Contradictions Questionnaire (ICQ). The source of inspiration for the ICQ was the Paradox Mindset Questionnaire, developed and applied by Prof. Ella Miron-Spektor and her team (Miron-Spektor et al. 2017). However, the applied questions were all positive, which – through the mechanism of social desirability bias (SDB) – may influence respondents. Along these lines, after receiving Prof. Ella Miron-Spektor’s permission, the ICQ was constructed, modifying the original questionnaire and blending positive and reversed statements.

The initial 12 statements were validated in an Anglophonic population ($n = 120$). Of the 12 initial statements, 10 were identified as having good discrimination power ($M = 0.4$; $\text{Max.} = 0.56$; $\text{Min.} = 0.29$; $SD = 0.18$) and good reliability (Cronbach’s $\alpha = 0.779$). Factor analysis did not confirm our original hypothesis that the responses fall into the two categories of “cognition” and “energy” (i.e., action).⁴ The final questionnaire is shown in Table 1.

The validation process demonstrated that the ICQ is appropriate for scientific purposes, e.g., a comparison between segments of society.

Conclusions

Herein, it was shown that being able to hold and deal with conflicting concepts brings about many benefits, such as fostering creativity and

⁴The varimax rotation method was applied, verifying options for two and three components; however, it was decided that one overall component best fitted the data.

Paradox Mindset, Table 1 The influence of contradictions questionnaire

1	I am comfortable dealing with simultaneous conflicting ideas
2	I avoid dealing with conflicting concepts ^a
3	Tension between ideas mentally blocks me ^a
4	Encountering conflicting perspectives makes me confused ^a
5	Tension between ideas energizes me
6	I feel disempowered when dealing with contradictory issues ^a
7	When I consider conflicting perspectives, I gain a better understanding of an issue
8	I feel dejected when I see opposites coexisting ^a
9	I find dealing with conflicting ideas inconvenient ^a
10	I feel energized when I consider addressing contradictory issues

^aReversed

enhancing leadership skills. It paves the way for exploring the possible and – drawing from the coexistence of conflicting ideas – to play with future scenarios (Glăveanu 2018).

For further development of our understanding of Janusian thinking, the ICQ is an invaluable tool. Indeed, the validation process documented that the ICQ can be used for scientific purposes, e.g., a comparison between segments of society or finding possible correlations with other personality traits.

Future Studies

In future studies, the ICQ could be tested in a larger population. Other areas worth further investigation are the correlations with various personality traits, especially with ambiguity tolerance (AT) – the psychological construct that describes the relationship between individuals and ambiguous stimuli or events (Furnham and Marks 2013; Norton 2010). The conjecture is that people with higher AT will be more prone to embracing contradictions. Moreover, Janusian thinking could be a predictor of a higher empathy level, as understanding the perspective of others often requires considering a contradictory perspective to one’s own (Gerace et al. 2017).

It also seems important to verify the level of acceptance of the paradox mindset between various cultures. The first step has already been taken

by comparing the Chinese and Western approaches to contradictions: The Chinese way of dealing with contradictions was observed to be a dialectical or compromise approach by seeking a “middle way,” whereas European-American ways, derived from a lay version of Aristotelian logic, were shown to result in a polarizing model in an effort to determine which fact or position is correct (Peng and Nisbett 1999; Keller et al. 2017). Thus, it would be valuable to see the similarities and/or differences between other cultures as well.

Finally, future studies may verify the hypothesis that social entrepreneurs, while addressing seemingly insurmountable problems and struggling with obstacles, consider and embrace contradictory opinions for understanding the complexity of a challenge (Praszkier 2019).

Application

In the field of peacemaking, possessing a paradox mindset may influence one’s peacemaking (bipartisanship) propensity and aptitude. For example, conflicting parties often need help to become more psychologically ready to enter a peace process (Rifkind and Yawanarajah 2019). In this context, the ICQ may serve for verifying the training results of future peacemaking leaders.

Furthermore, most of the paradoxes analysis was aimed at the organizational level. However, individuals and their social interactions often serve as the microfoundations for higher-level organizational paradoxes. Hence, it seems that a more in-depth consideration of paradoxes needs to focus on the individual and team levels of analyses (Schad et al. 2016; Waldman et al. 2019). Within the realm of business, the acumen for embracing contradictions is highly sought after, especially in coping with obstacles (Andriopoulos 2003; Spreitzer 2020) or “feeling into” a competitor’s position or latent (future) market demands (Heracleous 2020; Heracleous and Robson 2020).

In summation, a paradox mindset is helpful in breeding future leaders, especially when preparing the younger generation for taking on pressing challenges containing ambiguities and contradictions (Tian and Smith 2015; Praszkier 2019).

Cross-References

- Creativity
- Divergent Thinking
- Emotion
- Possibility Thinking
- Tolerance of Ambiguity

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Participation

Edward P. Clapp

Project Zero, Harvard Graduate School of Education, Cambridge, MA, USA

Keywords

Participation · Roles · Common purpose · Socio-cultural theory · Social action · Democratic engagement · Power · Justice · Collaboration

Introduction

This entry explores the concept of participation as a means to pursue the possible. Participation can be defined as *uniquely contributing to an activity*

or common purpose along with others. Participation may take place in any number of environments, take many different forms, and involve complex social interactions. When taking a *participatory* approach to a given process or practice, it is suggested that multiple actors will be involved in that process or practice in a manner that is distributed and democratic, and in a manner that further leverages the strengths of each contributing participant. Context is also important to participation. The concept may therefore be described in very local terms – or considered more globally. This entry begins by situating participation within a broader academic landscape before defining the concept of participation in concrete terms. The entry then discusses the core principles of participation, contrasts participation with collaboration, and then closes with a discussion of participation and the possible.

Background

Participation is a general enough term that can be found in any English language dictionary – with more or less similar meanings being expressed across other languages. In a more specific application, wherein participation may be seen as a means to pursue the possible, the concept has several practical and scholarly connections. Four such connections include *participatory culture*, *participatory action research*, *participatory creativity*, and *JusticexDesign*.

Participatory Culture

As digital connectivity has increasingly become more and more a part of life and work, many scholars have been prompted to investigate the social interactions we experience online. Jenkins (2019) and his colleagues (Jenkins et al., 2009, 2015) have applied the term *participatory culture* to young people's engagement with online platforms. From Jenkins and his colleagues' perspective, young people – especially teenagers – participate in many different online cultures. These cultures may include video sharing platforms such as TikTok, YouTube, and Vimeo; knowledge sharing platforms such as Wikipedia,

Urban Dictionary, and various Fandoms; coding platforms such as Scratch; online gaming or sandbox platforms such as Minecraft; or any number of social media platforms such as Facebook, Instagram, Snapchat, or Twitter. By the use of these platforms – and a multitude of others – young people (and adults) may engage with content, upload content, like or comment on content, be influenced by (or influence others with) content, or hack, redesign, and re-upload content. Any time they do so, they are participating in one, if not many, online cultures. Jenkins and his colleagues argue that participating in digital cultures in this way yields a variety of benefits to young people, including learning from one another, acquiring twenty-first-century workplace skills, and engaging in civic discourse. The challenge, however, is to support all young people in having equal access to these online cultures while also providing them with the digital and media literacies necessary to be effective and responsible participants within these participatory cultures.

Participatory Action Research

For decades the concept of *action research* has become popular throughout many fields (see for example Whitehead, 2006 and the *Action Research* journal).¹ Generally speaking, action research involves a significant level of engagement between the researcher and the subject being studied. The outcome of such a study is action, not just generalizable knowledge. In some instances, the researcher is the subject herself, as it is her own practice that is being studied through a structured inquiry process. Taking a *participatory* approach to action research involves a heightened level of exchange between the researcher and the research subject. Both qualitative and quantitative in practice, participatory action research (PAR) often takes a more democratic and social justice-oriented stance toward the process of research. A comprehensive representation of participatory action research can

be found on the Participatory Methods (n.d.) website:

There are many definitions of the approach, which share some common elements. PAR focuses on social change that promotes democracy and challenges inequality; is context-specific, often targeted on the needs of a particular group; is an iterative cycle of research, action and reflection; and often seeks to “liberate” participants to have a greater awareness of their situation in order to take action (para 1).

As expressed by these elements of participatory action research, the practice is distributed, democratic, critical, and inclined toward outcomes that affect positive change – especially for the participants in the study.

Participatory Creativity

Stretching back to the late twentieth century, there has been growing interest in moving beyond individual orientations toward creativity to support more socially distributed approaches to invention and innovation. To this end, many books and journal articles have been written about group creativity (see for example Paulus & Nijstad, 2003, 2018; Sawyer, 2003), collaborative creativity (see for example John-Steiner, 2000; Miell & Littleton, 2004), and distributed creativity (see for example Glăveanu, 2014; Sawyer & DeZutter, 2009). Social approaches to creativity (often called *systems-based* approaches to creativity) have picked up so much momentum that, as recently as 2019, a consortium of over 20 leading creativity researchers published a manifesto supporting a socio-cultural stance toward creativity (Glăveanu et al., 2019). Within the mix of positions on socio-cultural creativity theory is *participatory creativity* (Clapp, 2016; Clapp & Hanchett Hanson, 2019; Clapp & Rains, in press; Hanchett Hanson, 2015; Hanchett Hanson & Clapp, 2020). Participatory creativity is a socio-cultural approach to creativity that emphasizes the participation of multiple actors within the creative process. From a participatory perspective, creativity develops by the unique contributions of many individuals in pursuit of a common goal. Individuals play various roles when they participate in creativity, but those roles are neither fixed nor

¹To learn more about the *Action Research* journal, see <https://journals.sagepub.com/home/arj>

unidimensional, but rather dynamic and flexible (Clapp, 2016). Like participatory action research, participatory creativity emphasizes a democratic stance toward invention and innovation, and often results in a collective sense of cultural empowerment (Glăveanu & Clapp, 2018). Furthermore, access and equity are elemental to participatory creativity. As the theory and related framework asserts, taking a participatory approach to invention and innovation provides all individuals to engage in the creative process, not just those who may be identified as *being* creative by traditional standards.

JusticexDesign

Building on the mounting empowerment trend of participation and the possible, the JusticexDesign framework for learning (Sheya et al., 2020) takes a critical stance toward maker-centered learning (Clapp et al., 2016), a popular pedagogical practice that involves incorporating making into various educational settings. The JusticexDesign framework (Sheya, 2022) argues that beyond the technical skills taught in schools and after school programs, *power*, *representation*, and *participation* are inherently at play within the design and making process. The framework prompts young people (and adults) to be critical consumers of the designs that they encounter – especially the designed-nature of systems of power. Three pedagogical principles shape the JusticexDesign framework: *design is not neutral*, *power is multi-dimensional*, and *participation is constructed* (Solis & Sheya, 2021). Regarding participation, Sheya et al. define the concept as such:

Participation can be understood as the various ways in which people engage with and contribute to the systems they interact with through the process of making. ... JusticexDesign's pedagogical principle *participation is constructed* manifests when students (a) look closely at oneself; (b) become sensitive to the design of participation; and (c) listen and speak bravely. (p. 18)

Interestingly, Sheya et al. argue that participation itself is a socially constructed – and designed – concept. By becoming sensitive to the design of one's participation, one may engage in the act of

critical participation. Individuals “come to see [the] complex ways their identities shape their interactions with, and reactions to design. . . and construct a new or different design that better reflects their ideas, values, and perspectives” (p. 19). By looking closely at oneself and developing a sensitivity to participation, one can then listen and speak (and act) differently. In other words, by looking critically at the socially constructed nature of one's own participation in a variety of designed systems (especially systems of power and oppression) one may change the way she participates within those systems to pursue the liberation of self and other – and the greater goal of justice.

Participatory culture, participatory action research, participatory creativity, and JusticexDesign represent just a few examples of the many ways in which participation has been employed to support the possible. While each has their own specific take on participation, some common themes include social interactions with others, the pursuit of positive outcomes, the democratization of engagement, and an inclination toward justice. Beyond these examples, when talking generally about the relationship between participation and the possible, it is helpful to have a foundational definition as a point of reference.

Defining Participation

Participation may take place in any number of environments, take many different forms, and involve complex social interactions. When taking a *participatory* approach to a given process or practice, it is suggested that multiple actors will be involved in that process or practice in a manner that is distributed and democratic, and in a manner that further leverages the strengths of each contributing participant. Context is also important to participation. The concept may therefore be described in very local terms – or considered more globally.

To keep things simple, participation is herein defined as *uniquely contributing to an activity or common purpose along with others* (Clapp & Rains, *in press*). Though simple to understand on

the surface, this definition without frills actually has four parts that are worth further discussion: *uniquely, contributing, activity or common purpose, and along with others.*

Uniquely

When individuals participate in an activity or common purpose of some kind, they do so in unique or specific ways. Here, the term *role* that is prevalent throughout participatory creativity is key. Individuals play unique roles when they participate in an activity or common purpose. The uniqueness of one's participation may be expressed in several ways. First, by the very role that an individual plays – or *uniqueness of role*. While the role one plays in a participatory activity or common purpose may not be uniquely specific to oneself, it may be distinct from the roles that others play in pursuit of a shared activity or common purpose. Think for example, of the role an outfielder plays on a baseball team. Whereas there is only one pitcher, catcher, first baseman, second baseman, shortstop, and third baseman on the field at a time – there are three outfielders. The collective role the outfielders play is different in function and responsibility from the role that the infielders play – even if the outfield position is similar across the three players. Second, the way one expresses her role, or *role expression*, may be unique. We can think back to our outfielders on the baseball team again. Yes, the general function and responsibility of an outfielder may be similar from one of the three players to the next, but there is also differentiation in the role, as there is a right fielder, a center fielder, and a left fielder – and each of those positions have different functions and responsibilities. But the way each of those outfielders plays their position is bound to be different – or unique – from one player to the next as well. In fact, a player in any position on a baseball team might express their role in that position differently from a player in that same position on another team. Third, there is the *personal uniqueness of self* that an individual participant brings to the greater collective. Here, personal uniqueness of self may be understood as the distinct social and cultural perspectives one carries with them,

along with their unique skills, talents, and background experiences.

Contributing

The creativity theorist Howard Gruber once described the creative process as *purposeful work* (Gruber, 1988). The point Gruber was making with this powerful phrase was twofold. First, that creativity is intentional, and second, that creativity does not just come as a flash of insight out of nowhere – it requires effort over time. The same can be said of participation: it requires intention and effort over time.

In order to participate in an activity or common purpose along with others, one has to do the work that the activity or common purpose demands. Doing the work of participation can be described as *contributing* to an activity or common purpose. As discussed above, there is not one way, but rather multiple ways to uniquely contribute to an activity or common purpose.

One may actively contribute to an activity or common purpose by doing the work in the moment that the work is taking place. This form of *actively contributing to participation* involves consciously enacting one's efforts to meet the goals of the activity or common purpose. If we refer back to our baseball metaphor, the players on the field during a game are actively participating in the game – or actively contributing.

One may also *passively contribute to participation*. How might this be? While passively contributing to an activity or common purpose may take different forms, one such example is when an individual may have done the work of participation in the past, while her efforts are playing a role in the present. The originators of the sport of baseball may not be actively contributing to the opening game of the 2022 Little League World Series, but the past roles that those individuals have played, and the efforts they have exerted, still have an effect on that game. Different from actively contributing to an activity or common purpose, passively contributing to participation may not involve a conscious awareness or intention of the role one's efforts may play in a future or parallel endeavor.

Activity or Common Purpose

The phrase *activity or common purpose* has been used a lot in the paragraphs above. An activity or common purpose may be understood as a collective endeavor or initiative that is pursued by a broader group of individuals. Some activities and common purposes are very specific and localized – like participating in a baseball game. Other activities and common purposes may be much broader – like participating in a capitalist economy, participating in democracy, or participating in a social change movement like the #MeToo or Black Lives Matter movements. The word *activity* is used here to suggest that the collective endeavor involves action. Whereas the phrase *common purpose* is used to suggest a shared intentionality and outcome.

Along with Others

The last part of the definition for participation presented herein is *along with others*. This is perhaps the most straightforward aspect of the definition – with an added twist. The phrase *along with others* suggests that participation does not happen in isolation, participation always involves the unique contributions of various individuals. Is it possible for one to engage in purposeful work on one's own? Perhaps (though however unlikely), but that individual's purposeful work would not be considered participation as it lacks the coming together of one's own unique contributions with the contributions of others. Seemingly working alone, it is still possible that one may be participating in an activity or common purpose along with others. Similarly, working at a geographic distance from others, one may still be participating with others. In this way, the concept of *along with others* is expansive, and may allow for the asynchronous and geographical distribution of uniquely contributing participants.

Combined together the four elements discussed above comprise the simple yet multi-layered and variable definition for participation stated at the top of this section: *participation can be defined as uniquely contributing to an activity or common purpose along with others*.

Core Principles of Participation

In addition to the various aspects of the definition for participation that have been parsed out above, there are also several core principles for participation that will be briefly described below.

- *Participation is inherently distributed:* Participation does not occur in isolation, but rather takes place among and across a broad swath of individuals. These individuals may actively or passively contribute to a shared endeavor and may or may not be geographically proximate to one another. Even when one appears to be working alone, one may still be consciously or unconsciously/intentionally or unintentionally participating in a collective activity or common purpose with temporally or geographically distributed others.
- *Participation may be anti-individualism, but it is not anti-individual:* Given the distributed nature of participation, it is a practice that favors the collective over the pursuits of lone individuals. In this sense, participation can be seen as a stance toward the possible that is counter to models of individualism that root feats of achievement in the efforts of sole individuals (who are often described as *gifted* or *exceptional* against some narrowly focused traditional standard for achievement that inclines itself toward the values and interests of a dominant culture). Here, it is important to draw a distinction between *individualism* and *individuals*. Participation is not an anti-individual approach to the pursuit of the possible. Quite the contrary. Participation places high value on the unique contributions of various individuals within a larger ensemble of actors. It is fair to say that participation is not possible without the individual uniqueness that diverse participants bring to collective work. It is also fair to say that participation may place an even higher premium on individual uniqueness within a collective than other socially distributed approaches to the possible.
- *Participation places an emphasis on different roles being played by each participant:* By uniquely engaging in participation, each

participant plays a specific role as they engage in a collective activity or common purpose. Even when the roles being played by one or more participants within a collective may be similar, the expression of role and what each person uniquely brings to that role may be highly variable. It is important to note, that the roles individuals play in the pursuit of activities or common purposes are neither fixed nor unidimensional, but rather flexible and dynamic (Clapp, 2016).

- *Participation is inclusive and democratic:* With its distributed nature and its emphasis placed on roles, participation is inherently inclusive and democratic. Taking a participatory approach to an activity or common purpose invites (if not demands) diversity of many sorts, while also providing a role for everyone to play within a collective endeavor. There is no one way to engage in a participatory activity or common purpose, but rather multiple ways to uniquely contribute to such objectives.
- *Participation is justice leaning:* The inclusive and democratic nature of participation inclines itself toward outcomes that are justice leaning – if not explicitly geared toward justice agendas. Participation’s justice leaning inclination further prompts pursuits of the possible that are oriented toward issues of inclusion, diversity, equity, access, and belonging in either process or purpose.
- *Participation is not equal to collaboration:* As will be discussed in the following section, participation is not equal to collaboration. Whereas participation places an emphasis on roles and the unique contributions of various individuals, collaboration is colloquially understood as *everybody doing everything together*. This is a nuanced, yet significant, difference between participation and collaboration as related approaches to the possible.

Contrasting Participation with Collaboration

Like participation, *collaboration* is a valuable socially distributed approach to the possible.

And while there may be many similarities between collaboration and participation, there are also stark differences.

Broken down to its root word and prefix, the word “collaborate” can be restated as “co-labor.” Co-labor can be literally understood as *everyone doing everything together* within a socially distributed endeavor. Working along with others toward a common purpose are surely key tenets that are shared by both participation and collaboration, but it is within the nuance of how the work is done that the two approaches to the possible diverge.

While participation explicitly places an emphasis on different roles being played by unique contributors, the most commonplace understanding of collaboration is limited to what co-laboring suggests: *everyone doing everything together*. But *everyone doing everything together* implies the duplication of narrowly focused work efforts in a manner that is less inclusive, democratic, or effective as providing the opportunity for a variety of unique individuals to bring the best of their diverse selves to an activity or common purpose as they each play a breadth of dynamic roles.

In a book chapter entitled “Don’t Call it Collaboration!: Reframing Success in Teams from the Perspective of Participatory Creativity,” Clapp (2020) makes a distinction between collaboration and participation, claiming that participation is a more inclusive, efficient, and successful approach to work in teams. Clapp uses the example of a soccer team to make this point: to the naïve observer, a soccer match may seem like everyone on the field running after the ball at once, but more astute observers of the sport understand that each player on the field has a specific role to play. During a soccer match, each player *participates* by playing her role on the team – however dynamic that role may be.

Clapp further makes a distinction between a colloquial *everyone doing everything together* understanding of collaboration versus the more nuanced, role-oriented, and individual uniqueness approach to social engagement that participation presents. Writing on the topic of “creative work in teams,” he notes:

Whereas a colloquial understanding of teamwork as collaboration . . . duplicates efforts, limits the ways that individuals may participate in creative work, and misses out on the opportunity to explicitly invite the diverse talents, skills, background experiences, and cultural perspectives that unique individuals bring to creative work . . . A participatory approach . . . distributes creative work among[st] a variety of individuals, each of whom plays unique roles that are dynamic and multidimensional, promotes the development of unique profiles of participation, and actively invites the diverse talents, skills, background experiences, and cultural perspectives that unique individuals bring to creative work. (106)

Of course, the scholarship on collaboration is vast (see for example Plucker et al., 2015), and many academic definitions of collaboration stretch beyond a simple *everyone doing everything together* conception of the term. Some theorists have foregrounded the role that identity plays in collaborative endeavors (see for example Moran & John-Steiner, 2004) while others, such as John-Steiner (2000) have “categorised [sic] collaboration based on roles, working methods, and levels of commitment” (Moran & John-Steiner, 2004, p. 13). Indeed, many other theorists have put forth nuanced orientations toward collaboration that align with the concept of participation as it has been presented. Nevertheless, the reductionist *everyone doing everything together* understanding of collaboration persists.

It is very likely that, in practice, many forms of what is casually referred to as collaboration are actually more participatory experiences than they are redundant co-laboring experiences. Nonetheless, if the goals of a socially distributed approach to the possible are meant to reach toward the core principles of participation as stated above, then it is advisable to make the implicit shift away from a co-laboring approach to practice – to one that is more participatory by design.

Participation and the Possible

Simply defined as *uniquely contributing to an activity or common purpose along with others*, participation is a multi-layered and socially distributed approach for pursuing collective

activities or common objectives. It is also a concept that is rich with potential for the possible.

As our world becomes more interconnected, the work of individuals acting in isolation – without any connection to the collective work of others – is likely to become less and less a part of our personal, professional, and creative lives. Even as the Internet and other telecommunication advances have made it possible to “work remotely,” the very nature of work – and of life – is inherently more about the coming together (virtually or IRL) of diverse people, with diverse talents, skills, experiences, and perspectives, each playing a wide variety of roles to achieve mutual meaningful goals. Participation not only provides us with a foundation by which to base such socially distributed work, it also foregrounds – if not necessitates – diversity in various forms. Pursuits of the possible may not only become more productive by the enactment of participation, but they may also become more rich, relevant, and meaningful as the unique contributions of unique individuals bring to bear the power of diversity through the participatory process.

The pursuit of the possible may be further bolstered by the key points of inclusion, diversity, equity, access, and belonging – and the democratic and justice leaning nature of participation. As this entry is being written during the third decade of the twenty-first century, the world is struggling with these very issues. From South Africa to South Carolina, inequities that have long existed along the lines of race and class have become all the more apparent due to the global pandemic known as COVID 19. The increased awareness – and frustrations – associated with these inequities have resulted in campaigns to support greater inclusion, diversity, equity, access, and belonging agendas throughout almost every social sector. At the same time, the very foundations of democracy are being threatened across the globe, as nationalism, political polarization, hate speech, xenophobia, and racial violence and injustice are on the rise. All this before even mentioning the escalating crises of climate change and environmental degradation that the world faces each day.

There is perhaps no time more ripe than now for participation to shape not only the possible – but what’s best for our global well-being and our world future. Here, it is helpful to refer back to the JusticexDesign principle (and provocation) that puts forth the idea that participation is socially constructed by both the self and others (Sheya et al., 2020). If we are to look closely at ourselves, and look critically at the ways that we participate in the designed dimensions of our worlds – then we may be able to engage with others to enact our collective agency by purposefully participating otherwise to affect positive change.

Considering the wicked problems we face today on so many institutional and structural levels, now more than ever, our hope for what *is possible* requires participation – both locally and globally – from as many unique contributors to the common good *as possible*.

At the end of the day, participation is power. The potential for each person to engage in participation is directly related to the potential each person has to shape their worlds.

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Peace-Oriented Mindset

Ryszard Praszkiar¹ and Paige Munnik²

¹Institute for Social Studies, Emeritus, University of Warsaw, Warszawa, Poland

²School of Psychology, University of Buckingham, Buckingham, UK

Abstract

This entry focuses on intractable conflicts, which have multiple and a complex components. It reviews various peace-maintaining actions, especially those focusing on building an environment that contributes to damping down conflicts and to preventing their outbreak.

The role of the peace-fostering environment is presented both from the perspective of the dynamical system theory, as well as illustrated by case studies, leading to a review of peacebuilders' specific personality characteristics. Moreover, multifactorial delineation of the aptitude for fostering peace, especially if intractable or looming, is presented.

This delineation led to the process of constructing the peace-oriented mindset (POM) questionnaire, as presented in this entry.

The conclusions are that a better cognition of peacebuilders' characteristics may contribute to identifying and training the best leaders in the field of peace maintaining and prevention.

Keywords

Conflict resolution · Conflict prevention · Peacebuilding · Peace psychology · Alternative attractors

Introduction

Conflicts may be active or dormant, violent or obtuse, manageable or intractable. In particular, the latter are a tall order for the people, families, groups, and nations involved. On the local level, they usually involve ethnic, religious, cultural, and economic disagreements or clashes – becoming far more complex on the national level. This complexity requires a multifactorial approach to peacebuilding. This entry draws from the existing delineations of maintaining peace, namely, the dynamical peace and conflict theory, and from case studies.

Intractable conflicts endure despite repeated attempts to resolve them. Such conflicts can exist at the family, community, organization, or international level, often becoming difficult challenges (Bar-Tal 2015; Coleman 2003, 2006; Kriesberg 1993). Moreover, they are often perceived as “impossible.” This entry demonstrates an approach that enables turning “impossible” conflicts into “possible” ones, especially when peacebuilders with specific traits are involved.

Maintaining Peace

It is trivial to say that peace is one of the most desirable states. The desire for maintaining peace is often categorized into four dimensions:

- *Conflict prevention*: Action to prevent disputes from arising between the parties involved, to prevent existing disputes from escalating into conflicts, and to limit the spread of the latter when they occur.
- *Peacemaking*: Action to bring hostile parties to agreement.
- *Peacebuilding*: Action to identify and support structures that tend to strengthen and solidify peace in order to avoid a relapse into conflict.
- *Peacekeeping*: Deployment of a United Nations military and civilian presence in the field to expand the possibilities for prevention of the conflict (Reychler 2017; Reychler and Langer 2020).

Documents of the United Nations assign the latter dimension, peacekeeping, into two separate lines of action:

- *Peace enforcement*: The application of a range of coercive measures, including the use of military force.
- *Peacekeeping*: Facilitating political processes; protecting civilians; assisting in the disarmament, demobilization, and reintegration of former combatants; supporting the organization of elections; protecting and promoting human rights; and assisting in restoring the rule of law.¹

For the purpose of this entry, the Peacebuilding and Conflict Prevention categories will be used.

Peace Psychology of the Key Players Involved

Peacebuilding (as defined above) in the area of intractable conflicts requires a specific psychology, namely, developing trust and cooperation (i.e., social capital; see: Coleman 2000; Fukuyama 1996; Putnam 1993); indeed, some people have the propensity for building social capital (Zabłocka et al. 2016). Similarly, conflict prevention requires specific sensitivity for detecting lurking conflicts and empathy in order to preclude their outbreak.

Rifkind and Yawanarajah (2019) indicated that often, the conflict-related psychological atmosphere is one of mistrust and suspicion: “This state of mind keeps conflict parties rigidly and emotionally attached to their positions and often psychologically blocked from being able to engage productively in a peace process and achieve outcomes that meet their best interests. (...) To make conflict resolution efforts more effective, conflict parties need help to become psychologically ready to enter a peace process” (p. 1).

For building such a psychosocial environment, an interactive problem-solving approach is recommended, being a process that changes parties’ perceptions about one another in a way that reconciles them and transforms their relationships – as opposed to focusing on the history of

conflict escalation, which may lead to reversing the dynamics (Kelman 1990).

More specifically, for a constructive peace process, the parties involved should have effective communication; demonstrate friendliness, helpfulness, respect, and fairness; coordinate their efforts; understand the ideas of others; agree to influence others with persuasion instead of pressure; and define conflict as a mutual problem (Deutsch 2012).

This indicates that a specific peace-fostering environment is required.

The Role of the Environment

Maintaining peace, if seen as a lasting and stable process, cannot be solely imposed from outside (e.g., through peace enforcement and peacekeeping); to be durable (e.g., through conflict prevention or peacebuilding), it requires a specific psychological context, one that fosters and maintains peace processes (Halperin 2016; MacNair 2012).

Intractable conflicts in societies lead to developing a specific psychosocial infrastructure, which includes collective memory, an ethos of conflict, and collective emotional orientations. This “around-the-conflict environment” becomes, over time, a key factor reinforcing, in a feedback loop, the core conflict (Bar-Tal 2007).

From this perspective, the essential challenge is to transform the sociopsychological context so that it becomes a peace-enforcing environment (Lederach 2003); this means transforming the environment while reaching beyond the sole conflict itself (Miall 2004).

For example, Dr. Yehudah Paz, from the high-level conflicted Negev area in Israel, posited that people become used to living in a conflict environment; they stabilize mentally, as well as economically, around the conflict.

When peace is suddenly “given” from outside, people feel lost and disempowered in the new, unknown, non-conflict environment, and they may tend to revert to the well-known conflict situation. This indicates restraining from direct conflict resolution attempts prior to transformation of the environment, so that said environment

¹United Nations’ Peacekeeping Terminology, see: <https://peacekeeping.un.org/en/terminology>. Retrieved 2 Dec 2021.

can support and sustain peace, instead of tending to relapse.²

This approach supports the notion of “conflict transformation” rather than “conflict resolution,” including the social, economic, and cultural context (Lederach 1996, 2003). Instead of approaching the peace process head-on and confronting the core conflicting issues, the solution would be to circumvent the conflict and build up a new, supportive environment (Praszkier et al. 2010).

Moreover, this approach enables perceiving and approaching the conflict dynamics as an opportunity for creating constructive change and development (Lederach 2003).

The so-called “Deutsch Crude Law of Social Relations” states that the characteristic processes and effects elicited by a given type of social relationship also tend to elicit this type of social relationship. The cause becomes the effect and vice versa. For example, cooperation *induces* and *is induced* by perceiving similarity in beliefs and attitudes (Deutsch 1973).

This has been confirmed by computer simulations of the possible conditions influencing the rise or decline of conflicts: It seems that conflicts grow exponentially in places with the highest incompatibility of interests, whereas even seemingly intractable conflicts can be transformed by creating a fast-growing, positive process outside of areas inhabited by direct conflict (Nowak et al. 2010).

Given the above, an important question arises: What sort of personality traits enable facilitating conflict transformation (especially if intractable) into a constructive outcome?

Attitudes Toward Peace

One of the earliest attempts to evaluate the psychology of peace-oriented people was a questionnaire built in the 1980s, called Irenometer;³ the result was a ten-statement scale (Bardis 1984).

The reliability has been shown to be good enough, though some doubts have arisen: What about the discrimination power of these statements? It seems that all of them prompt the same answer, e.g., everybody says “Definitely yes” to “Human society does not need an occasional war,” “Peace leads to much greater progress than war does,” or “Historians should never glorify war.”

The second doubt relates to all-positive wording, with no reverse statements, which may influence respondents through the mechanism of social desirability bias (SDB).

More complex research was conducted by an Italian team, who constructed and validated the Peace Attitude Scale (PAS) (Broccoli et al. 2021). A total of 499 subjects were tested with the 42-item form (graded on a 7-point Likert scale). The validation procedures indicated reducing the number of statements to 22, with good reliability. Factor analysis showed that five domains appeared to be relevant (Broccoli et al. *idem*):

- Sociopolitical
- Personal well-being
- Ease with diversity
- Environmental attitude
- Caring

The correlations between PAS and the Big Five were analyzed on a large sample ($n = 121$). Hierarchical regression analysis revealed that two Big Five personality traits, namely, Conscientiousness and Openness to Experience, correlated with peace attitudes (Cavarra et al. 2020). This indicates, among all, that individuals who are more motivated to seek out new experiences also tend to show stronger peace attitudes.

Peace-Oriented Mindset

Maintaining peace, as mentioned in the section “Introduction,” requires a multifaceted approach. In particular, peacebuilding means taking action, i.e., supporting structures that strengthen and solidify peace. Similarly, conflict prevention requires early detection of dormant or latent

²From an interview with Dr. Yehudah Paz led by Ryszard Praszkier, 29 Aug 2009.

³Department of Sociology, University of Toledo, USA.

conflicts, as well as preventing them from relapsing into open conflicts.

In this vein, there seems to be a need for a more dynamic and multifactorial delineation of the properties of a peacemaker, as someone who has sensitivity to lurking conflicts and is determined to take appropriate actions to prevent their outbreak. This property, defined below as a peace-oriented mindset (POM), is universal; individuals differ on the “very high”–“very low” POM continuum scale. Therefore, this entry focuses on individuals with a high POM level.

Computer simulations have confirmed that seemingly intractable conflicts can be transformed by creating a fast-growing, positive process outside of direct conflicting areas (Nowak et al. 2010). In lieu of this, peacemakers should have the capabilities to identify and initiate cooperation “outside of the conflicting area.” In the dynamical approach, these are called “alternative attractors,” i.e., a set of factors solidifying the dynamics around a given equilibrium (Nowak and Vallacher 1998; Säterberg and McCann 2021; Vallacher and Nowak 2007; Vallacher et al. 2010), as illustrated in the following case studies.

Example 1. Addressing Intractable Conflict in the Middle East

Dr. Yehudah Paz’s core conviction was that mere conflict resolution is not enough, as peace leaves a void that is very often difficult for people used to war to bear, especially if they see no other prospects.⁴ Based on this philosophy, he involved partners drawn from clashing groups in profitable joint ventures; through cooperating in these ventures, Jews and Arabs are able to experience the great benefits that ensue from joining forces. These joint ventures result in peace, opening new prospects based on trust and success. Not only do new enterprises appear, but a secondary effect ensues – the empowerment of women, who find themselves at the forefront of building a new economic development of their families and communities. The joint Israeli–Arab approach is reflected in the structure

of Dr. Paz’s organization, which is jointly led by two groups of women: Arab and Israeli.

Families benefit from the new economic ambience and become advocates for peace, as only peace guarantees further development. In light of this, by building bubbles of trust and cooperation, Dr. Paz’s approach also prevents the potential outbreak of dormant conflicts between these two communities (Praszkier and Nowak 2012b).

Following the dynamical peace and conflict theory (Vallacher et al. 2010, 2012), the attractor involved may be illustrated by the metaphor of a ball falling into a hole (see Fig. 1). An outer force (e.g., governmental projects or conflict resolution attempts) is needed to sustain the ball in the upper position (i.e., to mitigate conflict); when the force is removed, natural homeostatic mechanisms cause a setback to the initial state of equilibrium. In a natural way, after an adequately long time, regardless of the action taken, the system has a natural tendency to return to the initial state (equilibrium).

Dr. Yehudah Paz’s approach, instead of focusing on conflicting issues (pushing the ball up), is aimed at building a new attractor (see Fig. 2).

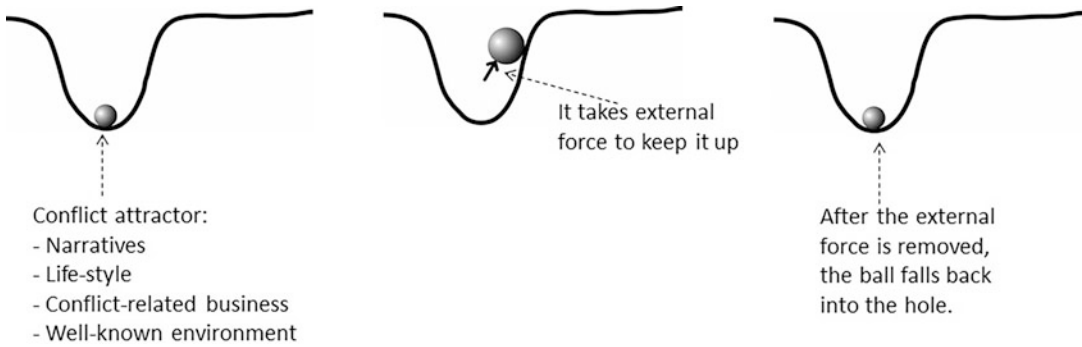
The new attractor, i.e., cooperation, trust, new friendships, and networks, all contribute to building social capital – the environment-transforming factor (Lin 2001; Portes 1998; Woolcock and Narayan 2000). Social capital sustains peace, as in peace ambience, through which multiple benefits are achievable (Praszkier and Nowak 2012b).

Example 2. Conflict Prevention in a Multicultural Border Area

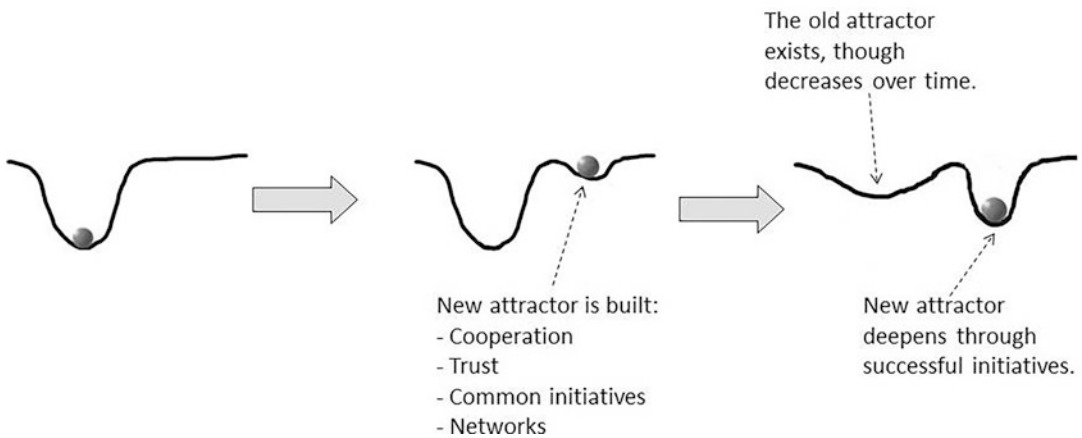
On the Polish–Lithuanian–Belarus border loom deeply ingrained cross-ethnic, cross-religious, and cross-cultural conflicts, which accelerate conflict in a feedback loop, thus impeding economic development and fueling poverty. As demonstrated by Krzysztof Czyżewski, a social entrepreneur from Poland,⁵ implementing various small, community-based initiatives is more effective in

⁴ See: <http://www.nisped.org.il/>

⁵ See: <https://www.ashoka.org/en-us/fellow/krzysztof-czyzewski>. Retrieved 4 Nov 2021.



Peace-Oriented Mindset, Fig. 1 A negative attractor causes the system to relapse, regardless of the actions taken



Peace-Oriented Mindset, Fig. 2 The positive attractor deepens over time, whereas the destructive attractor, which is circumvented and not addressed, automatically decreases

terms of attempting to overcome these conflicts, rather than tackling them head-on. If successful, these initiatives collectively form a new, positive attractor.

In order to restore the region's historical roots, Krzysztof Czyżewski focused on engaging children to publish a local chronicle. In this way, their efforts to collect and exhibit old postcards and photos and trace the multiethnic history of the region were publicized throughout the community, thereby rescuing the historic Catholic, Jewish, Orthodox, and Protestant roots of the area from obscurity.

Teaching traditional crafts and cross-cultural music lessons are some of the other initiatives implemented by Krzysztof Czyżewski, which allow young people to discuss the history and meaning of various traditions. Moreover, such

initiatives allow those local youths who were previously troublemakers and engaged in conflict with mainstream society to revive indigenous Jewish folk music, as well as to play in a national- and international-performing Klezmer orchestra.

As a result of his efforts, Krzysztof Czyżewski has successfully instigated hope and a new vision for the future in the region. The results of the many small initiatives he implemented have accumulated, thereby fostering a shift in the collective mindset of the community and engendering both social and economic development,⁶ subsequently preventing the potential outbreak of underlying

⁶Krzysztof disseminated his approach to many other European conflict regions.

cross-ethnic conflicts in a feedback loop (Praszkier and Nowak 2012b).

Comments on Examples 1 and 2

Dr. Yehudah Paz and Krzysztof Czyżewski are both spearheading peacebuilding. However, there are also people on the ground who are involved in both initiatives and thus often become second-generation leaders. For example, the cross-border project breeds several youth leaders, such as the non-Jewish klezmer ensemble, disseminating Jewish culture to the region and abroad.

This documents that the kind of attitude and acumens associated with building peace are available for all – for leaders, as well as for followers. In this vein, it is essential to be able to identify potential peacebuilding leaders, so as to train and involve them in preserving peace.

Constructing the Peace-Oriented Mindset (POM) Questionnaire

These examples (and many others, see: Praszkier et al. 2010; Praszkier and Nowak 2012a, b) show that there must be a specific peacebuilding-driven mindset. This sort of mindset requires both *cognitive* and *action-oriented* attributes, and, as such, seems foundational for building peace.

Along these lines, the *cognitive* characteristics should encompass awareness of all possible peace options, as well as tolerance of the diversity of beliefs, whereas the *action-oriented attributes* should lead to taking actions aimed at restoring and/or preventing peace. Reflection and operation would hence mutually reinforce one another.

To address the aforementioned objectives of peacebuilding and prevention, the cognitive capabilities include:

- Sensitivity toward possible scenarios and creativity in identifying alternative attractors
- Comprehension of the diverse points of view of the key players involved
- Tolerance of ambiguity and self-confident

As for taking action, peacemakers should be:

- Determined to find ways for crossing the divide

- Anticipatory and inclined to take preemptive (preventive) actions
- Willing to cooperate in the field of peacemaking

These guidelines served as the rationale for constructing subcategories and assigning items to them, as shown in Tables 1 and 2.

To build the POM questionnaire, particular items were assigned to subcategories, as shown in Table 2.

Validation

The initial 18 statements were validated on an $N_1 = 1074$ representative sample of the Polish population. Finally, the 14 statements (out of the initial 18; Table 2) were identified as having good discrimination power (all 14 statements over 0.78) and good reliability (Cronbach's alpha = 0.81).

The factor analysis revealed⁷ that these 14 statements fall into three components, which were labeled as “Cognitive,” “Performative,” and “Doability conviction.”

Discussion and Conclusions

Peace-maintaining processes, especially those addressing “impossible” conflicts and turning them into “possible” peace situations, were analyzed through the lenses of the existing definitions of peacebuilding and preventing, the dynamical peace and conflict theory, and case studies. To see seemingly intractable conflict situations as solvable, one needs a specific personality property called *possibility*, allowing to perceive challenges as doable (Praszkier 2021).

The importance of peace psychology and “conflict transformation” theory (as opposed to conflict resolution) was presented herein, focusing on transforming the sociopsychological context so that it becomes a peace-enforcing environment.

Building this sort of environment in areas of protracted conflicts requires finding alternative

⁷Rotation Method: Varimax with Kaiser Normalization; KMO = 0.884.

Peace-Oriented Mindset, Table 1 POM categories and subcategories

	Categories		Guidelines/rationale	Subcategories
1	Cognition	Awareness of the possible peace options, as well as tolerance to the diversity of beliefs	Sensitivity toward possible scenarios and creativity in identifying alternative attractors	Seeing opportunities for peace, even in the most protracted, intractable, and seemingly insurmountable conflict situations
2			Comprehension of the diverse points of view of the key players involved	Driven to understand the points of view of others, even if they are in opposition to one's own beliefs
3			Tolerance of ambiguity and self-confident	Cognizant that considering other points of view does not equate to shattering one's own convictions
4	Performative	Taking actions aimed at restoring and/or preventing peace	Determined to find ways for crossing the divide	Determined to build bridges between conflicted groups or individuals
5			Anticipatory and inclined to take pre-emptive (preventive) actions	Driven to conflict prevention in situations where conflict is looming/lurking
6			Willing to cooperate in the field of peacemaking	Joining peacemaking groups or organizations
7	Doability conviction	Perceiving challenges as doable	Seeing obstacles as feasible	Perceiving conflict situations as possible to prevent or to reverse back to peace

Peace-Oriented Mindset, Table 2 Items assigned to the subcategories

	Categories		Items
1	Cognitive	Finding neutral common ground	Opposing groups should find some neutral fields of cooperation
2		Listening to others while maintaining own values	Debating with others helps me see the world from a different perspective
3			Listening to others' viewpoints without losing sight of one's own convictions is important for creating peace
4			I can maintain my own convictions, even when they differ to the majority
5		Teamwork	I think that the power of peacemaking lies within teamwork
6			It is best to join a peacemaking organization instead of acting singlehandedly
7	Performative	Preventing conflict	I try to keep peaceful any situation in which conflict could arise
8			I can design an appropriate reconciliation process for a conflict situation
9			Indications that a conflict is looming make me think of how to prevent its outbreak
10		Building trust	I often think about how to foster trust between conflicted groups
11			I can think of innovative ways to build trust between individual parties of a conflict
12	Doability conviction	The ability to contain conflicts	It's possible for me to find an appropriate solution to a conflict situation
13			I feel capable when I see groups in conflict
14		A sense of being able to anticipate conflicts	I think that one can predict a conflict before it breaks out

attractors that foster cooperation, trust, and economic growth. Along these lines, the concept of a peace-oriented mindset was presented, followed by constructing a multidimensional evaluation tool that addresses both cognitive and action-oriented properties.

The presented POM scale, after validation, may serve as a tool for identifying peace-oriented individuals, as well as for training future leaders in this field. Moreover, the POM concept may also be applicable to working and family environments, as conflicts are an unavoidable part of the dynamics of human relations.

Further studies may identify correlations between the POM scale and other personality traits; for example, we hold that it may correlate positively with empathy (e.g., Wakabayashi et al. 2006), ambiguity tolerance (Herman et al. 2010), and paradox mindset (Praszkier and Munnik 2021).

Cross-References

- Empathy
- Paradox Mindset
- Positive Psychology
- Tolerance of Ambiguity

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Pedagogies of the Possible

Vlad P. Glăveanu^{1,2} and Ronald A. Beghetto³

¹Dublin City University, Dublin, Ireland

²University of Bergen, Bergen, Norway

³Mary Lou Fulton Teachers College, Arizona State University, Tempe, AZ, USA

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Pedagogies are directly linked to the possible, because they aim to open new and varied trajectories for learning and life. Still, many of the pedagogies enacted in formal schooling are restricted by a focus on what is already known and an emphasis on sameness. Pedagogies of sameness constrain the possible particularly when it comes to creative learning experiences (Beghetto and Vasquez *in press*; Beghetto and Yoon 2021). Paulo Freire has arguably (see Chapter 4, Matusov 2009) offered the most famous critique of pedagogies of sameness in his 1968 landmark book, *Pedagogy of the Oppressed* (Freire 2014), in which he made a strong argument against the “banking model of education.” This is a model based on the teacher making mental deposits within the student. A unidirectional transfer of knowledge and information in which teachers know best and know more, and students, as passive recipients, are guided to know what the teacher already knows. Working in the context of twentieth century

Brazil, Freire was sensitive to how this type of education not only limits the agency of students, but potentially contributes to colonizing their minds and to the oppression of marginalized groups within society. If one learns about how disempowering it can be to be part of a specific community, this belief ends up being internalized and curtails further action. Freire's aim was to help individuals and communities go through a process of "conscientization" in which educational banking deposits are questioned and people develop, through dialogue, a realization of their oppression and start reclaiming their agency, creativity, and future.

There is much to learn from this pedagogical principle, including in contemporary classrooms. In a day and age in which we struggle to respond to the racism, sexism, and xenophobia embedded deep within society, educators around the world have the responsibility to advance equity and social justice and the first step in this long process can be guided by Freire's conscientization. Twenty-first century education reckons with these and a broad matrix of problems, including the climate emergency and the realities of a (post) pandemic world. These combined challenges call for a new, radical rethinking of pedagogy, one that recognizes oppression as well as possibility. An education that continues its transformation from passing on knowledge and skills, as part of the banking model, to developing creative, ethical, and engaged citizens. The current context shows us the value of moving past the world "as is" and towards the world "as it becomes" and as it "could be." There is no denying of the fact that the students of today will face a different landscape of problems and solutions in a few short years. Gearing education towards the present, even while acknowledging this present as dynamic, is not enough. What we need is a multiplicity of pedagogies matching a multiplicity of known and unknown possible futures (Bruner 2009).

What would it mean to take on board our own assumptions about the world – e.g., that it is complex, multifaceted, open-ended, unpredictable, ambiguous, continuously changing – and infuse it into educational experiences inside and outside the classroom? How can we move our focus from

actuality to possibility in a way that doesn't lose track of "what is" but considers it through the lenses of "what is not," "what is to come," and "what can be brought about"? Could we envision new forms of pedagogy that let go of past certainties and the need to plan every single educational experience and become infused, instead, with uncertainty, wonder, liminality, hope, and possibility? In this brief entry, we express confidence and hope that these new pedagogies are not only possible, they are mandatory. What we need is a better understanding of how we can bring them about; in other words, how we can turn general principles into new practices. We start here from a discussion of the possible and its relation to difference, then continue by focusing on the nature of creative experience and end with some old and new themes that are important for designing for possibility in and outside the classroom.

Possibility and Difference

Pedagogies of the possible are eminently plural and this is due to the nature of the possible itself. But what exactly is the possible? Centuries of reflection in philosophy, literary studies, and, more recently, psychology, left us with a better understanding of what the possible is not rather than what it is. Two common dichotomies dominate this field of inquiry: possible|actual and possible|impossible. Both these oppositions are problematic. The first places the category of the possible into the realm of illusion and irreality. What is possible is never fully real given that the moment it materializes, one way or another, it passes from possibility into actuality. This understanding effectively separates being from becoming and fails to grasp the fact that possibilities are shaped and, in turn, come to shape "what is." The second dichotomy assumes that the impossible closes down all possibility; and yet, imagining impossible things has long been at the heart of human existence – as reflected in utopian thinking – and, thus, served as a driver of action, not the unsurmountable obstacle it is often assumed to be.

For education, these debates are important because they lead to two main approaches to

possibility, both of them limited: rejection on the basis that schooling should focus on what is real and not teach students about illusory things, or adoption inasmuch as the possible is reserved for what is likely to happen rather than what can never happen. In either case, we are left with an impoverished curriculum that sends students back to what is fixed, actual, known, likely and, most of the time, what took place in the past. In order to develop pedagogies that invite students to explore the unknown, the uncertain, the hypothetical, the future, and even the impossible, we need a shift in perspective and a redefinition of possibility itself.

What we propose here builds on sociocultural approaches to the possible (Glăveanu 2020a) that operate with a different set of assumptions, many of them directly relevant to the work of teachers and their classroom experiences. In particular, this approach considers possibility as emerging out of difference and, as a consequence, demanding the existence of multiple ways of thinking, acting, and being. For possibilities to be sensed, anticipated, and enacted, we require an understanding of how they differ from “what is,” as well as from each other. Differences of perspective are particularly fertile for the possible as they present the person with a multitude of positions in the world and their associated points of view. And what happens with this multitude is key for how we notice and make the most of existing possibilities (or not).

Educational settings are, by definition, the seat of difference and possibility. There is intrinsic diversity within any group of people, for as homogenous as their members might seem from a given standpoint. What amplifies this diversity is the fact that all the actors in education interact with each other, exchanging, adopting, challenging, and proposing new perspectives. These dialogues of perspective substantiate the possible in each classroom, if and when there is genuine openness to the point of view and the experience of other people (Glăveanu and Beghetto 2017). For as straightforward as this precondition of possibility sounds, it is often the most difficult to satisfy. This is because most classrooms are dominated by “Pedagogies of Sameness” rather than difference and possibility. Providing the same kind of feedback, the same resources, the

same level of support, the same tests, using the same scales, matching students with the same careers as before, etc., this principle is antithetic to the use of emergent differences to create, to envision multiple futures, and to learn with and from others.

Experiences of difference – especially radical differences – can be unsettling. And yet, it is precisely in this moment of disbalance, of failing to grasp the perspective of another, of starting to question the taken for granted, that possibility “irrupts” within our experience and, in doing so, transforms it altogether. In education, these moments are often described as creative experiences and, while possibility cannot be reduced to creativity, the building blocks of a creative experience reflect well the commitment to difference, uncertainty, and the future that characterizes what we call here Pedagogies of the Possible (see also Glăveanu 2020a).

Markers of Creative Experience

There is an old assumption in the field of creativity studies that schooling tends to “kill” – or at least harm – creative expression (even if empirical studies debunk this view; Gajda et al. 2017). Repeated calls have been formulated over the years to foster creativity in the classroom and considerable progress has already been made in this direction. We are witnessing today a gradual but sustained questioning of (and in some cases, move away from) standardization and towards personalized education, from formal schooling to lifewide learning, and from memorization to creative expression. With respect to the latter, important distinctions have been made between “teaching creativity,” “teaching for creativity,” and “teaching creatively” (Beghetto 2017b). There is increased awareness of the fact that creativity is more than a cognitive skill; it is a way of being, a manner of approaching problems and life itself that is flexible, nonlinear, and open to the future. However, while cultivating creative abilities and associated mindsets is high on today’s agenda in education, the assumption remains that there are times and places for “creating” and times

and places for “learning” and that a focus on creativity is valid only inasmuch as it helps teachers and students reach pedagogical goals set in advance. In other words, creativity is allowed in the classroom as long as it serves a purpose and that purpose is to attain predetermined learning outcomes.

What hinders creative expression and, with it, the exploration of new possibilities in education takes us back to the dominance of Pedagogies of Sameness. They are reinforced by the fact that, even when creativity is placed in the curriculum, the focus is on creative outcomes (e.g., evaluating their novelty, originality, value, surprise element) rather than creative processes and, especially, the kind of possibility-based relations creativity helps us establish with ourselves, with other people, and with the world. Recently, we advanced the notion of creative experience as essential for understanding creativity. We defined it as an experience specific for those novel person–world encounters characterized by open-endedness, nonlinearity, pluri-perspectives, and future-orientation (Glăveanu and Beghetto 2020).

Taking these in turn, open-endedness captures the fact that, in creative forms of education, both teachers and students alike are interested to explore topics and ideas they don’t have clear or final ideas about and to learn from each other in the process. Being open in the classroom means asking more “unknown questions” rather than questions the teacher, for instance, knows the answer to and guides the student towards. It also means accepting *not knowing* as a productive, generative state rather than something that has to be eliminated or dealt with. Nonlinearity captures the dynamic aspect of teaching and learning processes that never fully progress from a pre-determined point to another. Even in the most constrained and well-rehearsed episodes of teaching, the meaning being produced by teacher and/or students follows a nonlinear path – there is always room for serendipitous encounters. This is even more the case within classrooms that take a Pedagogies of the Possible approach to cultivating creative experience. Here, lesson un-planning (Beghetto 2017a) is used as a tool to introduce indeterminacy within an otherwise organized

performance. Indeed, it is not the case of throwing all rules out the window; in the end, possibility and creativity both need constraints. Pluri-perspectivism complements these two markers by revealing the possible within everyday classroom interactions. It is because each person holds a multitude of perspectives and shares at least some of them with others that there is the potential for emergence and novelty. Being able to listen to the point of views of others, and respect it as a perspective in its own right (even without agreeing to it), is a necessary (not sufficient) condition of creative experience. Last but not least, pedagogies of the possible orient all the participants in the educational system towards the possible rather than anchoring them in the past alone. The mission of education is not primarily to transmit old knowledge, but to transform this knowledge for the purposes of the present and in view of open-ended, multiple, and essentially unknown futures.

Old and New Themes Within Pedagogies of the Possible

The Pedagogies of the Possible are themselves an emergent category, one that captures a polyphony of voices and perspectives. Within them, it is not only the pedagogies that are plural, but also the possibilities. Eight possibilities for educators are briefly discussed below: not knowing, failure, uncertainty, movement, anticipation, dialogue, care, and responsibility. The first four represent phenomena that are typically less encouraged in the classroom, while the second four capture emerging points of focus in educational theory and practice.

Possibilities of Not Knowing

Typically, educational efforts are focused primarily on helping students know more and to gain certain and valid knowledge. Although understanding the known is an important pedagogical goal as it fuels creative learning and development (Beghetto 2019), a predominant focus on the known is problematic. This is because an overly narrow focus on the already-known ignores the intrinsic possibilities embedded within

experiences of “not knowing” for both teachers and students. Building on contemporary theories of wonder (Glăveanu 2020b; Schinkel 2020), we argue for the generative power of “dwelling in the unknown” (Heidegger 1962), the creative potential that opens from “sitting with uncertainty” (Beghetto 2016) and related practices that help us defamiliarize the known. The power to make the familiar unfamiliar helps re-present the world for teachers and students alike, to engage in constructive doubt and practices of questioning. This type of inquiry has long historical roots – going back to the *maieutic* method of Socrates – and holds the potential of uncovering new horizons for twenty-first century education, opening it up to multiple, undetermined outcomes and futures.

Possibilities of Failure

Just like not knowing, failure is discouraged in education or, at best, contained to small exercises students are meant to learn from (principally learn the correct answers and, thus, how to avoid future failure). This approach discourages risk-taking and creative exploration. More than this, it prevents students from learning from experience (Dewey 1934) and from seeing failures as new sets of possibilities made apparent by the encounter with what is – or seems to be – impossible. In this way, exploring and sharing narratives of our own and others’ failures opens new horizons for learning and growth (Beghetto *in press*). This exploration of the boundaries of possibility represents a key engine of growth and development because the act of trying out ideas and actions is a rare opportunity to understand oneself and the world. Experiencing different types of possibility-enhancing failures expands the repertoire of methods for those educators who have the courage to teach and learn creatively (Beghetto 2019).

Possibilities of Anticipation

It is often claimed that education should prepare students for the world of tomorrow and for jobs and challenges that have not yet emerged or been invented. And yet, the way schooling is done prioritizes the past over the present and future – it is the transmission of accumulated knowledge that has precedence, occasionally with

applications to the problems of today. We are in dire need of exploring a new set of possibilities in education enabled by our capacity to anticipate (Poli 2017) and, in doing so, to build multiple, open futures. An education geared toward the future needs to go beyond forecasting exercises that are chained to the past through pre-established causal links and that help students ask “what is most likely to happen.” In exchange, it should cultivate anticipations that lead to foresight or the abductive process of imagining what is to come in complex and nonlinear ways (Glăveanu and Beghetto 2020).

Possibilities of Dialogue

Dialogue has long been recognized as pivotal in education and studied in terms of exchanges between teachers and students, on the one hand, and students and students, on the other. The focus is often on designing dialogues that foster the transmission and reproduction of knowledge. However, there is more to dialogue than reaching a common understanding of things. In fact, from a dialogical point of view, the possibilities of dialogue rest precisely in the fact that there is always an element of new, surprising, or unpredictable insight associated with such exchanges (Bakhtin 1984; Matusov 2020). Dialogue also rests on perspective-taking and our human propensity to understand the minds of others. We need a more sustained exploration of the way in which dialogues of perspective construct spaces of emergence and possibility in education and how these spaces, in turn, resonate with wider dialogues within society and the alignment and clashes that substantiate them (Glăveanu 2020a).

Possibilities of Care

Another relatively new venue of research in education has to do with affect and what is becoming known as the “affective turn” in this domain (Dernikos et al. 2020). The discussion of emotions certainly has older roots, going back to an interest in self-esteem at school, but what we are becoming more and more aware of is the need to cultivate empathy and compassion in students and develop their emotional engagement with the world and with other people. The possibilities of

care (a notion discussed by Heidegger 1962, in terms of presence or *Being-there*) transcend any quick, transactional affective states and reveal the importance of opening oneself to the experience of others as part of one's own being-in-the-world. This necessarily means accepting a degree of vulnerability that helps teachers and students make the most of momentary, "creative openings" in education (Beghetto 2017b).

Possibilities of Uncertainty

Similar to not knowing, uncertainty is not generally welcomed in the classroom. In fact, it is often more difficult to see the learning opportunities embedded in the latter compared to the former. This is because uncertainty is associated with lack of control and education explicitly places teachers in a position of power and control, one from which they can develop student's ability to replace old uncertainties with newly found certainties. This misses an important and generative space of possibility (Beghetto 2020) in which certainties can be questioned once again and the uncertain confidently explored. Different practical tools have been recently proposed for educators who are willing to expand these spaces without giving up all structure in the form of lesson un-planning and structured uncertainty (Beghetto 2017c, 2019). These techniques are based on the principle of cultivating possibilities within otherwise planned lessons and fully exploring their potential for learning, creativity, and development.

Possibilities of Movement

Acting upon most of the possibilities outlined in this encyclopedia depends on movement, either physical or symbolic/psychological. In turn, mobility depends on acts of repositioning and especially position exchange (Gillespie and Martin 2014). Through the latter, we get to occupy, even if temporarily, the position of the other and, thus, grasp his or her perspective. This contributes to the dialogues of perspective mentioned before and the new possibilities discovered through them (Glăveanu 2020c). We need to add a new, embodied dimension to these dialogues by focusing on the movements that underpin them.

As argued in recent decades within the new mobilities paradigm (Urry 2016), movement is an integral part of human existence and action, and this certainly applies to the domain of education. We should thus examine more closely all the ways in which movements both open up as well as close down possibilities while preventing us from being stuck within singular positions in and perspectives on the world.

Possibilities of Responsibility

Pedagogies of the possible concern much more than what happens within the walls of the classroom – they connect us to society and the power dynamic that enhances possibilities for some groups while diminishing them for others. As such, it is imperative for twenty-first century education to raise key ethical questions and issues that advance a social and environmental agenda preparing students for an engaged life as citizens (Glăveanu 2015, 2017). The possibilities of responsibility connect us to the world outside of the school and especially the struggle of different marginalized communities to reimagine society. Developing students' capacity for utopian thinking and for hope (Solnit 2016) is crucial for the kind of social transformation that starts with education and fundamentally shapes it. In the end, Pedagogies of the Possible are both enablers of and enabled by "societies of the possible" (Glăveanu 2020a) and their commitment to plurality, alterity, and to an open future. Moreover, enacting new pedagogies and projects that go beyond the walls of schools and classrooms entails an inherent responsibility of anticipating and monitoring the potential unintended consequences of innovative efforts.

Final Thoughts on Designing for Possibility in Education

Pedagogies of the Possible represents a radical new way of looking at education that is guided by the themes discussed above and by the hope and confidence that we can create practices of schooling that not only mirror the changing world of today but understand and lead this

change towards a more just, inclusive, and sustainable future. New pedagogies are emerging before our eyes, animated by a need to correct racial and social injustices, confront the long shadows of colonialism, tackle the swiftly advancing climate emergency, and adapt to a pandemic and post-pandemic social and educational environment. What these pedagogies have in common, we believe, is a focus on the possible as an emancipatory, participative, and emergent category. The possible is not the opposite of the real but its companion and engaging with it is the true marker of human existence and human society. In this sense, Pedagogies of the Possible aim to rekindle the core feature of pedagogy by inviting us to acknowledge the potential that lies within moments of rupture, of uncertainty, of not knowing and to cultivate this potential within all classrooms, on a global scale, in the learning and lives of all people.

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Perspective

Vlad P. Glăveanu

School of Psychology, Dublin City University,
Dublin, Ireland

Centre for the Science of Learning and
Technology, University of Bergen, Bergen,
Norway

Abstract

This entry focuses on the notion of perspective as it is used in philosophy and psychology. From a pragmatist standpoint, I conceptualize perspectives as action-based relations with the world and, in doing so, respond to both accusations of skepticism and relativism usually addressed to perspectival accounts of knowledge, truth, and reality. In fact, following Mead's perspectival realism, I propose here that perspectives orient our thinking and action and, through this, help us discover new possibilities for both. After a brief introduction that discusses different meanings of the word perspective, I move on to describe an action-based account of perspectives and, with its help, review some important debates around perspectivism as a school of thought. In the end, the entry briefly outlines a perspectival theory of the possible that not only considers perspectives essential for our behavior and knowledge but also indispensable for becoming aware of and exploring new possibilities.

Keywords

Perspective · Perspectivism · Position ·
Action · Pragmatism · Possibility

Introduction

The notion of perspective is commonly used in a range of disciplines, including art, philosophy, and psychology, as well as often referred to in everyday language. For instance, we can ask others to see things “from our perspective” or “our point of view” and be asked to do the same in return (Kaipainen and Hautamäki 2015). In art,

perspective is employed to represent three-dimensional objects on a two-dimensional surface and, in this way, to add space and depth – in other words, realism – to a picture plane. Interestingly, the rules of perspective in Western art, rules that we nowadays take for granted, have been developed during the Renaissance, in Florence, in the early 1400s (see Boddy-Evans 2019).

And yet, this infusion of realism into paintings through the use of perspectival techniques might seem at first to be at odds with how perspectives are employed in philosophy and psychology to problematize our very understanding of **reality**. Starting from visual perception, where it soon becomes clear that we all perceive the world from a certain position (and, hence, develop unique visual perspectives on it), the notion came to designate our relationship to knowledge in general. But this transition between perception and knowledge also obscured different meanings of the word perspective:

When we want to discuss how things appear to us without committing ourselves to the claim what we have is knowledge, we preface our statement with ‘from my perspective;’ if we want to expand or question our preconceptions we say we need to ‘approach things from a different perspective;’ when we want to get a better idea of how things are in relation to other things, we might say we need to ‘put things into perspective.’ The concept of the perspective is given a metaphorical life that so exceeds its application in visual language that we scarcely notice the inconsistency of its use. In the first statement, a perspective is a personal thing that has little to do with how things actually are and more to do with how they are interpreted. In the second, a perspective is malleable, adaptable, and adoptable, and this mutability can reveal new aspects of the way things are. On the third, we are confronted with a specific perspective that *is* the way things are – putting things into perspective is to view them as they truly are relative to all other things and relations. (Raff 2018, p. 4)

Most often, the use of perspective in philosophy and psychology makes reference to the first two meanings, depicting knowledge as partial and malleable. This has often been interpreted as a denial of either reality or, at least, of the possibility of grasping the final or absolute truth about it. If our perspective is one among many, how can we be sure that it is the correct one? And, if things can

always be approached from multiple perspectives, then can true knowledge ever be possible? The first question fuels skepticism, the second one relativism. The third meaning in the quote above uses the word perspective to actually negate other perspectival accounts – the possibility to adopt an aperspectival point of view, a view from nowhere leading to an absolute conception of the world (Nielsen 1993).

And yet, as I will argue here following pragmatist scholarship, the fact that our knowledge and experience are perspectival doesn't need to deny reality or follow an "everything goes" mentality that is, worryingly, so aptly used today by advocates of **post-truth** in politics and society. Holding a perspective doesn't distort the world but relates us to it in a specific manner. In the words of G. H. Mead (1938, p. 115), "the perspective is the world in its relationship to the individual and the individual in his relationship to the world". Perspectives are, essentially, relationships we establish with the "something" that is their object, their "aboutness". A perspective, thus, is not forged in the mind as an abstract idea, but in the process of acting in and on the world and interacting with others. This is a crucial point to make and, as we shall see here, one that can help us solve the paradoxes of perspectivism. In the end, it is this relational and action-based nature of perspectives that makes them essential for opening up the possible in our existence. Moving between perspectives, placing them in dialogue and "playing" with them (in the way **Magritte** and the cubists did in art) both intrigues and delights us for a reason. Relating to the world from multiple perspectives, I argue towards the end, radically expands our possibilities for thinking about it and acting on it; it is, ultimately, what makes the possible *possible*.

Perspectives and Action

Perspectives, as mentioned above, are part of a visual type of vocabulary. To hold a perspective, in psychology and in art, typically means to have a certain viewpoint into a scene or, more broadly, to have a point of view. But a point of view requires

being in a certain position (i.e., the point) from where we look at the world. If we are to extrapolate from this, the positions we occupy in the world not only physical but also social and symbolic. We are embodied beings who, at all times, perceive only a small fraction of our environment through our senses. These are the perceptual perspectives (including visual ones) we develop from being in a certain place at a certain time. We are also socially positioned by occupying different roles in different situations or even in one and the same situation. For example, doctors and patients, parents and children, speakers and listeners, etc. Each one of these social roles affords us unique perspectives in a situation guided by specific concerns, interests, and types of knowledge. For instance, when trying to find a good toy, a child might very well have a different perspective on what "good" means compared to a parent. This means that their conceptual or symbolic perspectives differ.

What is useful about positions is not only to understand that each perspective we develop relates back to a kind of position we occupy in the world, but that we can and do change positions (physically we move, socially we exchange roles, etc.; see also ► "**Position Exchange Theory**") and, as such, can shift our perspective, including take the perspective of another person. It is because of this fundamental capacity that we are never "trapped" within singular or unitary perspectives but compelled to diversify, compare, and integrate perspectives in our interactions with others and the material world. This kind of interactivity is the premise behind the pragmatist approach to perspectives. In the words of Jack Martin (2006, p. 67), "a perspective is an orientation to an environment that is associated with acting within that environment. Perspectives emerge out of activity and enable increasingly complex, differentiated, and abstracted forms of activity. Because the human world is a social world, all perspectives arise and are employed within interpersonal interactivity".

Saying that a perspective orients us towards our environment means that it basically orients our action. It is in the course of action (and interaction) that we get to occupy different positions

and have a chance to vary our perspectives that, in turn, guide what we think and what we do in a particular situation. To take a simple example, during episodes of **play**, children get to adopt different positions, like thief and policeman, and consequently enact the perspective of a thief or a policeman within the play situation. The child who plays thief is consequently looking for any opportunities for wrongdoing and the child playing policeman tries to apprehend the thief. These different perspectives open up for them different action possibilities (Martin and Gillespie 2010): suddenly a piece of wood can become a pretend weapon and a piece of thread can be used to make a trap. Needless to say, without taking on these roles (or positions) within play and thus enacting their perspectives, the children's actions wouldn't have used any of these **affordances**. It is because we adopt certain perspectives in a situation that we get to experience a certain set of possibilities within it. As our positions and perspectives change, so do these possibilities. An exploration of the possible, as I will argue at the end of this entry, requires us to adopt various positions in the world, experience their perspectives, and place them in dialogue.

Many of these ideas go back to the seminal work of **George Herbert Mead** (1938), who famously associated taking the perspective of the other with the emergence of the human self. In his view, it is only when we become able to step outside of our position and understand ourselves from the standpoint of an other – effectively grasping this other's perspective on our action – that we become self-reflective. Without this kind of **reflection**, the self never gets to take any distance from his or her egocentric view of the world; in other words, from his or her individual position and perspective. It is in interaction with others that we open ourselves to new positions and new perspectives and, in the process, become able to simultaneously experience being in one's own and another's perspective (Martin 2006, p. 69). To return to the example of children's play, in order to coordinate their actions as thief and policeman, each one of the players needs to be aware of the perspective of the other while enacting his or her own

perspective. The thief wouldn't know where to hide without an understanding of the perspective of the policeman, i.e., where a policeman would look for him or her. This is essential for any social interaction. When speaking to others, if we had no possibility to grasp their perspective and relate it to our own, we wouldn't know what to say, how to say it, when to continue, and when to stop.

This brings us to the important function of *distantiation* afforded by adopting multiple perspectives on the world. In essence, as Martin and Gillespie (2010) argue, most organisms in the natural world are contained to singular perspectives because they have only one type of relation to things in the world (e.g., cows cannot relate to grass as anything other than food). Humans, on the other hand, have a flexible relation to the world precisely because, through their action, they can “take distance” from their position, exchange positions, and alternate between perspectives. And it is by coordinating perspectives that we develop as “psychological beings with self-understanding, and purposeful, agentic capability” (p. 256).

Perspectivism: Approaches and Debates

If in psychology action-based approaches to perspective prove to be very fertile for our understanding self and **agency**, in philosophy perspectival accounts have been formulated mainly to address issues related to knowledge and truth (see, for example, the recent volume edited by Massimi and McCoy 2020). And it is in these latter areas that perspectivism has proven to be highly controversial in particular due the accusation that it ends up denying reality by fostering an extreme form of relativism. In this section, I will briefly review this debate and the numerous attempts made in recent decades to reunite perspectivism with realism. I will use the pragmatism account described before to contribute to this defense of perspectivism and try to debunk important misconceptions about perspectives and about the nature of our knowledge more generally.

First, let's start with a description of metaphysical perspectivism:

Metaphysical perspectivism can be succinctly defined as the view that all being is perspectival. This means that the world is made up of perspectives upon perspectives and perspectives within perspectives. There is nothing more ultimate or fundamental about it than these perspectives and their constituents, in their convergences and divergences. (...) It follows that, not only is there no absolute standpoint from which the world can be comprehended as a whole, there also can be no such thing as an all-encompassing totality or unity of the world. For metaphysical perspectivists, there is considerable truth in claiming that there are as many worlds as there are perspectives. At the very least, such thinkers will insist that ‘the world’ – if we wish to retain that convenient locution – exhibits pervasive, ever-evolving disunity as well as unity in its perspectival character. (Crosby 2007, p. 57)

The short passage above makes the connection between a perspectival ontology and a perspectival epistemology and its consequences. If ontologically we live perspectival lives, bound as we are by our position in the world and its unique and situated character, then our knowledge of the world is necessarily partial and situated. This claim raises a serious challenge to our centuries old understanding of truth as that knowledge that corresponds to how reality is. If we cannot fully grasp reality, then can we know any ultimate truth about it? In fact, advocates of an absolute truth must, implicitly or explicitly, support an aperspectival, “view from nowhere” (or “God’s view”) approach to knowledge in which there is a way to escape limited perspectives and develop an all-encompassing one that, as we see from our discussion here, would go against the very idea of a perspective. The difficulty is that, while we can see how many areas of life and certain disciplines are highly perspectival (e.g., interpreting a piece of art or debating the meaning of democracy), others, especially in the natural sciences, are founded on the very assumption of objectivity and the quest for an ultimate truth about how reality “is”. Hard sciences might accept that we develop partial and situated perspectives but then strive precisely to overcome them.

A strong form of perspectivism, however, would say that this scientific goal is in vain. That we never escape the perspectival nature of our

knowledge and, more than this, that there is no ultimate truth to discover about the world. This position opened up perspectivism as a school of thought to accusations of fueling skepticism and relativism, that it aims to replace facts with interpretations (see Raff 2018). According to this criticism, perspectives not only limit our understanding but distort it. And yet, different authors came to claim that, whatever version of perspectivism one adopts, there is always a possibility to reconcile it with realism (see, for instance, Votsis 2012). Some of these solutions propose that, if perspectives always give us partial knowledge, then adopting multiple perspectives or putting them in relation to each other would get us closer to absolute knowledge. However, postulating the former violates already a core assumption of (strong) perspectivism. Is it possible to respect the fact that we can make truth claims about the world while fully adopting a perspectival ontology and epistemology?

To answer this question, we must return to the work of Friedrich Nietzsche, the scholar who is often considered the father of perspectivism. While the notion that our knowledge is perspectival predates Nietzsche and goes back, for example, to pre-Socratics like Protagoras, he most famously denounced objectivity using a clearly perspectival approach. In the *Genealogy of Morals*, Nietzsche (1956) claimed that, if we want to see differently than we need to embrace different perspectives, to use “different eyes.” Interesting to note, Nietzsche’s own thinking about truth, knowledge, and reality had evolved over time. If at first, he found the true world unattainable or unattained, he later moved on to questioning the existence of a true world and its usefulness, ending up by rejecting it altogether. In one of the most cited paragraphs of his work, Nietzsche writes:

Henceforth, my dear philosophers, let us be on guard against the dangerous old conceptual fiction that posited a ‘pure, will-less, painless, timeless knowing subject’; let us guard against the snares of such contradictory concepts as ‘pure reason’, ‘absolute spirituality’, ‘knowledge in itself’: these always demand that we should think of an eye that is completely unthinkable, an eye turned in no particular direction, in which the active and

interpreting forces, through which alone seeing becomes seeing *something*, are supposed to be lacking; these always demand of the eye an absurdity and a nonsense. There is *only* a perspective seeing, *only* a perspective ‘knowing’; and the *more* affects we allow to speak about one thing, the *more* eyes, different eyes, we can use to observe one thing, the more complete will our ‘concept’ of this thing, our ‘objectivity’ be. But to eliminate the will altogether, to suspend each and every affect, supposing we were capable of this—what would that mean but to *castrate* the intellect? (Nietzsche 1956, GM, III, 12)

What the passage above makes clear is the fact Nietzsche believed, much like the pragmatists that came after him, that perspectives relate us to world in a much deeper way that perception (and his own metaphor of “seeing”) suggests. Moreover, that looking for a “view from nowhere” is absurd and actually damaging to our knowledge and understanding of the world. By rejecting the existence of absolute, disinterested knowledge, Nietzsche actually dispenses with skepticism because beliefs can no longer be falsified against “what is.” Moreover, it is a mistake to believe that, in doing this, the German philosopher gave a free hand to extreme relativism in which there is no basis anymore for wrong or inaccurate perspectives. In fact, Nietzsche doesn’t completely relinquish truth claims and he repeatedly considered specific perspectives to be false. An example of the latter is the theologian’s assertion of truth, when in fact his or her perspective is clouded by resentment and upheld by an instinct of self-preservation. Even if Nietzsche didn’t believe in any ultimate truth, he did find some perspectives “truer” than others (see Jonas and Nakazawa 2008).

The reception of perspectivism has been mixed to say the least. Pointing to the paradox at the heart of perspectivism, Reginster (2001) for instance wonders how Nietzsche himself was able to make any claims at all if no perspective is absolutely true. But, as we saw from the discussion above, many of his critics are misreading Nietzsche. Perspectivism is not opposed to realism and the idea of truth, it just gives them a new basis compared to the old correspondence theory and Kant’s thing-in-

itself. Massimi (2016), for example, identifies no less than four types of perspectival truth. She advocates in particular for a “success from within” approach in which a perspective performs adequately with respect to the standards appropriate to its epistemic context when assessed from another point of view or another perspective. Different forms of perspectival realism came to prominence in recent years and a wider understanding about perspectivism emerged that “rather than making knowledge meaningless through distorting the interpretations made by cognizing subjects, perspectives enable the cognitive relation to occur, and have a structural role in the relation between a cognizing subject and objects of their cognition” (Raff 2018, p. 2).

This understanding takes us back to action-based accounts of perspectives specific for pragmatism. In this approach, briefly outlined in the previous section, perspectives enable the cognitive relation with our world to occur and much more. It is not only knowledge, but the very existence of a human self that is at stake. Instead of being distortions of reality, perspectives give us access to it and also help us *transform* it. Because one fact that is obscured by a knowledge only focus, but revealed by an action one when it comes to perspectives, is that thinking and acting in the world are deeply interrelated. There is no knowledge possible outside of action (see Piaget 2005). Perspectives not only reflect the world back to us; they help us change it in the course of our interaction with other people and their perspectives. This is how, for example, Davey’s (1990) point that “whereas perspectivism initially offers the interpreting subject access to a plurality of worlds, it in fact ends up asserting a multiplicity of self-enclosed worlds between which hermeneutic transfer is impossible” (p. 277) becomes invalid. In a pragmatist sense, perspectives are *interactive* in both their origin and dynamic and far from self-enclosed universes. After all, they capture the truth about the interconnected worlds we live in. And they also reveal what is possible.

Perspectives and the Possible

From a pragmatist, neo-Meadean standpoint (for details, see Gillespie 2005; Martin 2007), positions and perspective are interchangeable and interdependent with each other. Indeed, instead of having in mind an abstract individual trying to figure out the world on his or her own, pragmatism proposes a view of agentic people who move between positions, exchange perspectives, and, in this way, construct dynamic spaces of intersubjectivity. It is due to the fact that we can come to an agreement about certain perspectives on reality, including by taking the perspective of others, that we judge some perspectives as more useful, complete, or “truthful” than others. But it is also the case that it is the gaps and tensions between perspectives that open up new spaces of possibility for self and others.

The theory of the possible I have formulated over the past years (see Glăveanu 2018, *in press*) starts in fact from the notion of perspective or, more precisely, from differences in perspective. The premise of this theory is simple: to perceive our relation with the world (including our knowledge of it) as a perspective means to understand it also as *one among many*. The fact that I hold a perspective basically means that another person can and does hold another one, likely on the same issue. This is the case with both visual (or, more broadly, perceptual) perspectives, given that we all necessarily occupy different physical positions in the world, and conceptual perspectives, where people can come to different conclusions because of the difference in their social and psychological positioning (e.g., their life history, interests and concerns, existing knowledge and so on). To be aware of one’s relation to the world as a perspective on it means, therefore, to become aware that more is possible in the way we think and act on the world when adopting a new perspective. And it is this ever-present possibility of repositioning oneself, ultimately defining our existence as social beings, that compels us not only to have a sense of the possible but also actively explore new possibilities by placing different perspectives in dialogue.

Martin and Gillespie (2010) saw the dynamic captured here as essential for agency and emergence. I postulate it as also fundamental for our relation to the possible. The two issues are intimately related since, as the two authors note, “agentive activity emerges” at the intersection of “an expanded matrix of actual and imaginal perspectives and possibilities” (p. 259). The fact that we are not trapped within singular perspectives (or types of relation) to the world means that we can always approach it from a new position, including the position of others that becomes internalized in the process of developing perspectival selves (see Martin 2005). Perspectival selves and worlds, as the ones imagined by Mead, are selves and worlds of the possible. Conversely, worlds in which there is only one ultimate or absolute perspective – which, as explained here, means that other perspectives are useless, and that the one perspective effectively loses its status as a perspective – are those in which there are no new possibilities to explore, worlds devoid of emergence and **novelty**.

Summary

The notion of perspective is widely used in art and the social sciences. However, these multiple uses have different histories and hide different meanings. This is how perspectivism as a school of thought encompasses a multitude of possible interpretations about the nature of truth and of what is real. To describe perspectives as illusory mental constructions that distort our understanding of reality is, as shown here, a misrepresentation. Perspectives are not mental representations but action-based relations that we establish with the world from our physical, social, and symbolic position within it. They guide action and are discovered and transformed in the course of action and especially inter-action. It is because we live in a world populated by others, with their own positions in and perspectives on reality, that we get to complexify our own knowledge, including of oneself. Perspectivism, from the pre-Socratics to Nietzsche and to the neo-Meadeans of today, doesn’t promote an “anything goes” philosophy,

far from it. On the contrary, it grounds truth and knowledge in action and it considers not only how we get to know but also to change our shared reality. This is why, nowadays, it has a series of promoters who support its application including in teaching the natural sciences (see Pearce 2013).

For the purpose of this Encyclopedia, I added a new dimension to current discussions of perspectives, action, and knowledge, that of the possible. My argument has been that perspectival worlds are also words of possibility and that understanding one's relation to the world as "one among many" is crucial for making us aware of an expended field of possibilities. This is how, for instance, acts of repositioning and **perspective-taking** become essential for engaging with the possible, joining other processes discussed in these pages such as **imagination**, **counterfactual thinking**, or **wondering**. I would even go as far as to propose that the notion of perspective, as put forward here, underpins most of these other processes and can give us a solid basis for developing a general theory of the possible, should this endeavour ever be considered useful.

Cross-References

- [Affordance](#)
- [Counterfactual thinking](#)
- [Imagination](#)
- [Novelty](#)
- [Perspective-taking](#)
- [Play](#)
- [Position Exchange Theory](#)
- [Post-truth](#)
- [Reality](#)

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Perspective-Taking

Brett Heasman¹ and Alex T. Gillespie²

¹Centre for Research in Autism and Education (CRAE), UCL, London, UK

²Department of Psychological and Behavioural Science, LSE, London, UK

Abstract

Perspective-taking is a routine and seemingly intuitive part of our everyday social life, yet at the same time, it is a difficult phenomenon to describe, conceptualize, and enhance. This entry considers (1) ways of conceptualizing the primary elements of perspective-taking; (2) reframing perspective-taking as an interactional achievement rather than a purely cognitive skill of the individual; and (3) the relationship between perspective-taking and our ability to imagine possible futures.

Keywords

Perspective-taking · Dialogism · Theory of mind · Double empathy · Subject · Other · Object · Mediator · Context · Time

Definition

Perspective-taking is a term that has been used variously across the social sciences to refer to the process of imagining other points of view. It is a routine and intuitive part of everyday life because being able to infer and predict the behavior and intentions of others increases one's own opportunity to coordinate meaningful action and establish shared understanding (Tomasello et al. 2005). It is also inherently fascinating, as evidenced by narrative genres which are built on the story of how characters interpret and misinterpret each other's goals and intentions (e.g., Iago manipulating Othello, resulting in the mistaken perception that Desdemona is unfaithful). Trying to imagine a social world without perspective-taking reveals how fundamental it is to our sense of reality. Without perspective-taking, humans would be

unable to share stories, enjoy jokes, play team games, or form groups with dynamic organization because such groups are organized through understanding that group members have distinct and potentially unique roles and responsibilities vis-à-vis each other and that all other group members are, to some extent, aware of these different roles. Communication would lose the ability to use symbols (be they words or gestures) because their use is contingent on a shared understanding of its meaning to others (Farr and Rommetveit 1995; Mead 1922). Indeed, perspective-taking underscores wider metacognitive abilities, because understanding one's own thoughts and feelings requires the ability to view one's own position from the perspective of an outsider (Gillespie 2005; Mead 1925). Thus, social interaction, without perspective-taking, would reduce humans to a stimulus-response relationship with each other, where consensus could only ever be achieved coincidentally through behavioral alignment rather than as the result of any mental or emotional process.

Yet, despite the innate and routine presence of perspective-taking in everyday life, research on perspective-taking has revealed that it is a very difficult phenomenon to describe and measure. Different disciplines have investigated perspective-taking according to their own ontological and epistemological frameworks which have led to fragmented findings and concepts which, arguably, do not do its holistic nature justice. There are arguments about what perspective-taking is, for example, it could be considered a heuristic strategy, a cognitive module, an automatic orientation, or an interactional process (Heasman and Gillespie 2018b); how it should be measured or assessed, for example, processes of cognition, developmental trajectory, depth of conceptual knowledge, and empathy (Apperly 2012; Heasman 2018); and what causes it to fail, for example, language difficulties, implicit biases, conflicting norms, or impaired metacognitive skills (Boucher 2012; Epley et al. 2004). Consequently perspective-taking has been explored in diverse ways, for example, in the form of automated and implicit skills, such as joint-attention skills (i.e., coordinated nonverbal attention on an

object, either through eye gaze or pointing), recognizing false beliefs in others (i.e., studies of theory of mind; Wimmer and Perner 1983), evaluating implicit normative rules (Happé 1994) and mirror neurons (Gallese and Goldman 1998). Alternatively sociocultural psychological approaches have examined perspective-taking in terms of reflexive and interactional factors, including studies of introspection (Danziger 1980), folk theory (Malle 2003; McGeer 2001), social attribution (Heider and Simmel 1944), child development (Vygotsky 1986), social emotions (Shweder et al. 2008), intersubjectivity (Tomasello et al. 2005), and technology (Gillespie et al. 2018).

Conceptualization

Given the diverse term used, it is useful to identify properties that are common across research on perspective-taking. However, terminology itself poses a challenge since the language used to describe perspective-taking is often imbued with ontological assumptions. For example, using the language of “perceivers” (i.e., the entity doing the perspective-taking) and “targets” (i.e., the entity whose thoughts are being imagined) denotes the assumption that perspective-taking is a linear action, from an active perceiver to a passive target. While more automated forms of perspective-taking are amenable to such an approach (e.g., developmental studies of theory of mind which studies the acquisition of basic cognitive structures such as false belief attribution), everyday social contexts are more complex, fluid, and multilayered. In such contexts “targets” are not passive, but similarly imagining “perceivers” in return, and mutual awareness of being perceived shapes subsequent interactional moves. Moreover, this mutual awareness leads to mutual action in which each party tries to shape the perspective-taking activity of the other party, for example, through repairs (Schegloff 1992) and intersubjective effort (Corti and Gillespie 2016). A more stable terminology can be drawn from existing sociocultural frameworks which is based on the classic social psychological triangle (Zittoun et al. 2007).

Specifically, perspective-taking can be conceptualized within the triadic relation between Subject, Other, and Object.

Subject. The terminology that we use is relative to the Subject. The Subject is the focal person being examined, and it is in relation to this Subject that Others and Objects get defined. The Subject may attempt to understand the perspectives of Others within the social field (interpersonal perspective-taking) and may also attempt to see themselves from the position of others in the social field (intrapersonal perspective-taking). Subjects are not impartial perceivers of the social world but rather construct perspectives about Others based on their own norms and expectations (Epley et al. 2004). Although arguably resulting in a subjective bias where perspective-taking is always partial (Rommetveit 1974), such subjectivities are not necessarily a source of “inaccuracy.” Interlocutors are aware that others may be subjectively biased in their interpretation of the world resulting in a metacognitive dynamic that actively shapes how people present themselves and respond to Others (Ickes 1993). Subjectivity is thus a natural component of perspective-taking that is both created and navigated by subjects and should not be considered as a source of unwanted error.

Other. Others are usually humans, but they can be animals, toys, artificial agents, or entirely imagined entities. The key is that these entities, as imagined from the viewpoint of the Subject, are endowed with subjectivity, that is, with a contentful view of the social world – specifically a point of view that may be different from that of the Subject. Others may not always be other people who are immediately co-present; they can be removed third parties or even possible audiences (either at a different point in time or at a more hypothetical level, in the form of superaddressee; Bakhtin 1986). Others may also include the Subject, in terms of trying to imagine one’s own current or future thoughts and feelings. It can also involve abstract others in terms of the generalized perspective of the group (Mead 1934). Others therefore range from concrete phenomena related to the behavior of individuals to abstract phenomena related to the perceived dynamics of a group.

Object. All perspectives, whether direct (i.e., one's own perspective) or meta (i.e., taking someone else's perspective), are focused on an Object (Laing et al. 1966): this is what they are "about." Developmentally, this might be illustrated by an infant (Other) reaching for a bottle of milk (Object) which a parent (Subject) may then imagine that the child wants. Objects can include physical world phenomena (e.g., a bottle of milk) but can also include abstract phenomena, such as topics being discussed or relationships themselves. Thus, within a marriage, both parties (Subjects) may be imagining what the Other thinks in light of their perceived attitudes toward the marriage itself (Object). People's goals and intentions are another type of Object that facilitate perspective-taking. For example, in a sporting contest, the opponent's (Other's) desire to win (Object) is a principle which guides the Subject to anticipate and make predictions about the opponent's behavior in different scenarios. It is possible to have multiple Objects, and in cases of strategic communication (Habermas 1984), it is possible for subjects to conceal some Objects (e.g., an ulterior motive) for the purposes deception. An important property of Objects is that they are usually shared, either perceptually (because they are physically apparent to both parties) or conceptually (e.g., mutual awareness of a relationship).

Perspective-Taking: Dynamic and Contextual

Perspective-taking by the Subject in regard to the Other's view on some Object does not occur in an abstract Platonic realm, outside of time or space. Rather, perspective-taking is dynamic and situated. Accordingly, the Subject-Other-Object triangle needs to include mediators, context, and time.

Mediators. Mediators can be material (i.e., tools) or semiotic (i.e., language). While material tools are used to act on the physical world, semiotic mediators are used to act on the mind, or perspective, of other people (Gillespie and Zittoun 2010). Semiotic mediators facilitate the recognition and interpretation of meaningful acts. Mediators can include systems for signification, such as language, or the cultural norms that people are socialized into. Often people perspective-take

during activities – organized sets of rules and structures to guide ways for subjects to relate to each other. For example, conversation is an activity with its own implicit rules about turn-taking (Schegloff 1992) and appropriateness (Grice 1989); however, other types of activity such as ordering from a menu in a restaurant come with standard expectations associated with particular social roles that guide perspective-taking (Goffman 1958). Compare, for example, a Subject throwing a punch. During a contest a punch is recognized as a legitimate act for the purposes of winning. Outside of the activity of the round (i.e., after the round bell when fighters return to their corner), a punch is recognized as unsportsmanlike conduct for the purposes of cheating. Outside of the boxing ring altogether, a punch is recognized as an assault for the purpose of harm. Thus the shared understanding of the activity mediates the interpretation of the act (throwing a punch) which in turn shapes perceptions about the intentions of the person throwing the punch and predictions about what they will do next. Importantly it is possible for mediators to become Objects, for example, the use of a particular word in an argument can cause offence and become itself the topic of conversation.

Context. Context refers to the physical and social spaces in which perspective-taking occurs. Importantly context has two properties that can impact the nature of Subject, Other, Objects, and mediators. First, contexts are fluid and have the potential to change. For example, changing world events can quickly render some jokes (Objects) insensitive or inappropriate, which would result in negative attributions about the speaker (Other) and their language (mediators) by the audience (Subjects). Secondly, context comprises the shared assumption of what is known between Subject and Object (e.g., the historical relationship between Subjects and Others or the shared understanding about the cultural significance of particular artifacts or practices). Thus when interacting Subject and Object will consistently refer to aspects of context to "fill in" meaning (e.g., assumed shared knowledge behind marriage discussions (Garfinkel 1967)). Like mediators, it is possible for contexts themselves to become

Objects through explicit reference (e.g., via language).

Time. Time refers to the ongoing interactional dimension of perspective-taking. Although time itself is a type of context which can be made an Object through explicit reference, it is included here specifically as a separate constituent to highlight the interactional and sequential nature of perspective-taking. With each interactional behavior, be it a turn in conversation or nonverbal gesture, Subjects make salient some aspect of their thought processes with an expectation that it will elicit a particular response from Others (Farr and Rommetveit 1995). Communicative acts are therefore sequentially organized over time with Subjects in a continual process of mutually updating and shaping their perspective-taking in light of the ever-changing interactional history. Specifically, each turn in the interaction is “history making” in the sense that it becomes part of the partially shared temporal context within which subsequent turns in the interaction will obtain meaning (Bakhtin 1986). Moreover, different and multiple timescales are possible with perspective-taking. At a micro level, subjects may perspective-take in a given context with an imminent future action in mind (e.g., a “wink” from a speaker indicating that their most recent behavior has more private connotations) or a far more distal action (e.g., marriage vows which are imagined across all future selves; Adam 2013). Likewise it is possible to imagine the perspectives of historical figures through reading firsthand accounts, and it is possible to imagine the perspectives of future selves up to and beyond the point of death (Zittoun and Gillespie 2015).

Perspective-Taking as Interactional Achievement

Perspective-taking is well-documented within the field of developmental psychology, which has explored in depth the acquisition of meta-cognitive skills at different stages in childhood. How children recognize different perspectives, both perceptually (i.e., imagining differing

visual perspectives; Piaget and Inhelder 1969) and conceptually (i.e., imagining differing beliefs; Wimmer and Perner 1983), has led to the development of explanatory models of cognition (e.g., theory of mind). However cognitive models potentially overestimate the role of intellectual problem-solving (Apperly 2012; Leudar 2004) and underestimate the extent to which perspective-taking should be seen as an interactional achievement (Heasman and Gillespie 2018a).

There are two key advantages to understanding perspective-taking as an interactional achievement: its ecological validity in terms of recognizing the rich intersubjectivity which underscores the unique way in which humans make sense of each other and its utility in terms of opening up more possibilities for enhancement and intervention. Regarding the former, everyday perspective-taking involves interpreting how subtle shifts in context shape meaning for different perspectives within the social field while similarly considering how Others may be motivated to present themselves in a socially advantageous way (Goffman 1958). However a rich, situationally relevant understanding cannot be achieved through abstract reasoning alone; rather interlocutors work together to co-construct understanding (Schegloff 1992) in the flow of interaction, as evidenced through analysis of basic conversation patterns (Sacks et al. 1974). Each turn within a conversation can simultaneously act as both a response toward a prior turn and an invitation toward a future turn (Linell et al. 1988), guiding and reshaping ideas about the perspectives of others.

The interactional view has a further benefit in explaining a common property of all social interactions: the potential for misunderstandings (Ickes 1993; Laing et al. 1966). Often misunderstandings are attributed to individual parties within an interaction and are generally seen as an undesirable, inefficient, and inaccurate outcome of “failed” perspective-taking. However, misunderstandings are part of a wider intersubjective mechanism for flagging moments where interlocutors realize their perspectives are not in alignment and setting up the possibility of

realignment. This has different scales depending on the nature of the Object in question. For example, sometimes an Object may be doubtful about what has been said, and a repair sequence (Schegloff 1992), consisting minimally of three turns, helps interlocutors to flag misalignment in shared understanding and literally “repair” the source of the troubled turn. Such instances can be very quick and unconsciously automated given their routine deployment. However sometimes the Object can be much larger, such as a marriage, and interlocutors may continually interpret evidence, over many years, about whether they are in alignment about what the marriage means to both parties. In both cases, regardless of the scale of the Object, mutually recognizing the misunderstanding is the first step toward refining the approximate ideas Subjects perceive Others to hold.

Indeed, an interactional view of perspective-taking highlights how it is possible for the content of ideas to affect the process of perspective-taking. For example, autistic people have often been characterized as lacking a theory of mind (Boucher 2012) and empathy (Milton 2012) on the basis of abstract theory of mind tasks (Heasman 2018). However, non-autistic people have been shown to be biased in their interpretation of autistic adults’ perspective-taking abilities precisely because of this view (Heasman and Gillespie 2018b). Thus the very theories about autistic perspective-taking open up or constrain possibilities for perspective-taking (Hacking 1996). Moreover, autistic-to-autistic social interactions show sophisticated forms of perspective-taking not afforded by a purely cognitive view, where experimenting with the voices of film characters can lead to the creation of new language (mediator) for identifying goals (Object) and coordinating action with Others (Heasman and Gillespie 2018a) while playing video games (context). An interactional view is therefore advantageous because it recognizes, in more pragmatic terms, the processes through which people are able to achieve shared understanding, rather than attempting to focus too narrowly on qualifying the value and accuracy of a given metacognitive moment.

Possibilities Through Perspective-Taking

The interactional basis of perspective-taking outlined above extends beyond the immediate perception of co-present others to create possible futures. Humans are fundamentally future oriented, with their physiological and psychological structures geared toward practical action (James 1878). Indeed, the future is, arguably, more than the past, a driver of human action. But as an instigator of human action, it is puzzling: How can something that does not yet exist prompt human action? This can occur because the future for humans is not actually in the future; it is a semiotically constructed space of possibility in the present. Although the feelings of what is immanent can seem absolutely real, they are, nonetheless, a semiotic chimera, like the step on the stairs in the dark which one’s entire body believes to be there, only to find it absent. Thus, it is within the imagination of the future that occurs within the present where possibility exists (Gillespie 2007; Mead 1932) – as paths of possibility that enrich the perception of an otherwise pinpoint moment in time. Specifically, perspective-taking in the present intersects with, and enhances, the possible in two ways.

First, at a basic level, perspective-taking enhances the possible because so much of what will, might, or should happen depends upon other people. The world that people routinely navigate, attempt to predict, and to some extent shape is not merely a physical world; it is a social world. Having a rich mental model of what significant others (i.e., people who are consequential for one’s self) think not only makes one’s plans more likely to succeed, but it makes new plans possible. Possibilities emerge in the social world for convincing, disagreeing, teaching, joking, deceiving, and so on.

Second, at a more fundamental level, perspective-taking, one could argue, underpins human’s peculiar capacity to vividly imagine alternatives in the first place. This argument goes back to Mead (1934) who was puzzled by how humans could become an object to themselves, enabling them to tell themselves what to do – in much the same way as one might try to tell someone else

what to do. His idea was that humans “get outside themselves” by taking the perspective of significant others. Children growing up learn who they are in the eyes of others and, in this way, learn about themselves. For example, it is through other people telling the child what to do that the child eventually becomes able to tell themselves what to do; equally, it is through being appreciated that the child becomes able to appreciate themselves.

This ability to see ourselves from the outside, which occurs via perspective-taking, is, like the future, a semiotic construction. Mead was not suggesting mind-reading or that the mind can wander outside its body. Rather, perspective-taking is one of the most basic processes of the semiotic extension of the present: it expands one’s immediate here-and-now perceptual reality into the minds of others and into possible futures. While the road extending ahead and the body of the person standing there are perceptually evident, where the road leads and what the person is thinking are not perceptually evident and are thus semiotic constructions. Yet, it is in these semiotic constructions that possibility originates.

Indeed, what makes perspective-taking particularly unique for humans is the ability to go beyond purely imagining other perspectives to enacting them altogether. People can tell stories using the voices of others (Bakhtin 1986), real or imagined, which is a quality of intersubjectivity and perspective-taking made possible through language. Likewise people can readily suspend disbelief (Coleridge 2014), putting aside their own perspectives and understanding of reality in adopting a fictional worldview. The rich weaving together of subjectivities that humans can imagine, coordinate, and perform highlights why perspective-taking should be understood as an interactional ongoing process rather than a purely abstract cognitive ability for the purposes of accurate social perception.

Summary

Perspective-taking is more than a cognitive ability to impute thoughts to others. It is a process of

extending our perception of reality, both by imagining futures and reconnecting with the past, by engaging with the immediate social field, and by experimenting with the narratives of characters in fictional social fields. Humans are unique in their ability to not only imagine a range of perspectives but to enact them, adopting different voices in the dialogic construction of self.

Cross-References

- [Dialogical Self Theory](#)
- [George Herbert Mead](#)
- [Perspective](#)
- [The Possible in the Life and Work of Mikhail M. Bakhtin](#)
- [Theory of Mind](#)

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Philosophical Health

Luis de Miranda
Uppsala University, Uppsala, Sweden

Abstract

In the last decades of the twentieth century, the first contemporary “philosophical counselors” started to appear in Europe and the USA, sometimes equating the idea of “philosophical health” with “spiritual health” or “therapy for the sane,” thus partly reviving traditions of Ancient Greek and Roman philosophical practice. Philosophical health is a state of fruitful coherence between a person's ways of thinking and speaking and their ways of acting, such that the possibilities for a sublime life are increased and the need for self- and intersubjective flourishing satisfied. One is engaging in philosophical health when one's behavior is careful (and *care-full*) in considering not only the physical or psychological individual balance but also a certain idea of what the collective and holistic good of humans and all beings on earth might be. Compared to “physical health” and “psychological health,” the idea of “philosophical health” may still appear to be new. In the twentieth century, the phrase was mostly used as a metaphor to describe sound philosophical thinking versus faulty reasoning, and the meaning has been since then extended to describe the attunement of a way of life with its conceptual evaluative grounding. A first step to understand that the idea of philosophical health is equally as important as

physical and psychological health is to recognize that any human being possesses philosophical beliefs, intellectual allegiances, and conceptual concerns, even if not yet fully explicit or compossible.

Keywords

Philosophy · Health · Care · Eudynamia · Possible · Philosophical counseling

From Physical and Psychological Health to Philosophical Health

The phrase “philosophical health” was recently proposed as a complement to the ideas and practices of physical and psychological health (de Miranda 2019). Philosophical health is a state of fruitful coherence between a person's ways of thinking and speaking and their ways of acting, such that the possibilities for a sublime life are increased and the need for self-flourishing and intersubjective attunement satisfied. A philosophically healthy individual, group, system, or protocol ensures that the goals and purposes of the whole are pragmatically attuned with its highest ideals while respecting the regenerative, plural, and possibilizing future of multiple forms of life.

“Physical health,” nowadays considered self-evident, became part of modern discourse in the nineteenth century only, along the publication of manuals such as *Health Made Easy for the People, or Physical training, to Make Their Lives, in This World, Long and Happy* (Bentley 1845). The Victorian period saw a growing emphasis upon gymnastic instruction in Europe, for example, via athletic programs in public schools (Shephard 2015, 630). In Sweden, for instance, Pehr Henrik Ling, appointed fencing master at the University of Uppsala in 1805, observed that a personal program of daily exercises (fencing, horse riding, and swimming) completely restored his previously fragile health, and he was appointed in 1813 as Principal of the newly founded Royal Central Gymnastic teaching and training institute. Nowadays, the access to physical health is not a luxury for the happy few anymore; it is rather

considered to be a necessity for all. In recent decades, lifestyle-related citizen health has been increasingly monitored as a more or less universal or standard program by governments, schools, organizations, and corporations (Åkerblom 2020). Regular physical health might not be fully forced upon citizens as compulsory, yet it is certainly perceived by many as a categorical imperative, an internalized duty.

The phrase “psychological health” has slowly become a trope of our social reality since the end of the nineteenth century and the establishment of the first psychology labs in European and American universities. Janet and Freud were notoriously influential in conveying the idea of psychological healing (Larson 2017), then again applying it firstly to a few more or less privileged patients in Paris or Vienna before the notion disseminated and became a general norm. In the USA, for instance, as part of the Mental Hygiene movement that emerged in the early twentieth century, Thomas W. Salmon proposed broadening the specialty of psychiatry beyond the traditional focus on institutional care toward the societal prevention of mental illnesses (Parry 2006). By applying it to communities and social preventive programs, the National Committee for Mental Hygiene secularized and democratized the idea of psychological health in the USA (Grob 1983, 162). The slow rise in the western world of “the therapeutic culture” and the cult of the self-led to the perception of homo sapiens as “psychological man” (Rieff 2006). Psychological and mental care is today a ubiquitous licensed profession, certain forms of which are sponsored by nation-states, and “psychiatry, in the most general sense of the *psy* disciplines, has moved very powerfully into the ways in which people understand themselves, their self-technologies and into the ways in which people articulate and judge their mental states” (Rose 2020, 3).

Compared to “physical health” and “psychological health,” the idea of “philosophical health” may still appear to be a curiosity: “The first thing to notice is that there does not seem to be anything such as philosophical health, or at least we do not often speak that way” (Peterman 1992, 4). Until recently, the phrase was mostly used as a

metaphor to describe sound philosophical thinking versus faulty reasoning:

Perhaps the only discipline or method by which we can expect to improve our capacity to stand above the non-rational determinants of our philosophical beliefs and concerns is the exploration, with as much objectivity as we can muster, of the origins and antecedents of those beliefs and concerns. We *need* to know how we got where we are. The deeper the presupposition, the more valuable to our philosophical health is the activity of discovering how it was acquired. (Ayers 1985, 28)

The author of these lines, to be fair, was not much concerned with the layman, but rather with the professional and scholarly thinker, judged more or less capable of complete logical, rational, or epistemological coherence.

This somewhat professionally restricted idea of healthy thinking is often associated with Wittgenstein’s insistence on logical or linguistic consistency and his early deflationist – if not nihilistic – stance about the limited possibilities of philosophical knowledge (Gilmore 1999). However, Wittgenstein’s later insistence, in his *Investigations* (1953, §133), on the idea of philosophy as a kind of therapy that can bring peace of mind may have been instrumental in the genealogy of how the idea of philosophical health is potentially becoming democratized. According to Wittgenstein and some of his followers, we should not indulge our temptation to ignorance or cognitive somnambulism if we are to cultivate a healthy mind: “Consistency between our ways of thinking and speaking and our ways of acting eliminates, or at least reduces, the psychic tensions that acting against one’s own allegiances will cause” (Gilmore 1999, 146).

A first step to understand that the idea of philosophical health is equally as important as physical and psychological health is to recognize that any human being possesses philosophical beliefs, intellectual allegiances, and more or less rationalized concerns, often not yet fully explicit or compossible, that is theoretically and pragmatically compatible. A second step is to recognize that any form of health can be trained and improved, with the help of specialists if necessary. Between the 1960s and the 1990s, the first contemporary “philosophical counselors” started to

appear in Europe and the USA (Raabe 2001), sometimes but not always equating “philosophical health” with “spiritual health”: it was now admitted that “some people believe that good health also includes a feeling that one’s behavior is in rhythm with one’s basic values (see values). This feeling may also include a sense that life has meaning and is worthwhile” (Levy et al. 1984, 7).

A collective ideal of philosophical health may suggest that the cosmopolitical and practical idea of philosophy as democratic therapy is reborn from its Ancient Greek ashes: “The operative notion of philosophical health depends on a conception of the human good” (Peterman 1992, 18). One is individually engaging in philosophical health when one’s behavior is careful (and *care-full*) in considering not only the physical or psychological individual balance but also a certain idea of what the collective and holistic good of humans and all beings on earth might be, starting with one’s own good.

From Mental Health to Mental Heroism

Far from the popular cliché of the philosophizing person as one who renounces social life and fully represses passion or ambition, philosophy can revitalize our way of living, make it thriving, attuned and multidimensional, toward a fulfilling of one’s highest destiny. This path necessitates a form of courage that ancient philosophers compared to a heroic realization of wisdom:

The sage would thus be the man capable of living on both planes: inserted perfectly into daily life, like Pyrrho, and yet immersed in the cosmos; dedicated to the service of men, and yet perfectly free in his interior life; conscious and yet peaceful; never forgetting the unique essential; and finally, and above all, faithful to the point of heroism to the purity of moral conscience, without which life would no longer be worth living. This is what the philosopher must try to actualize [*réaliser*]. (Hadot 2014, 198 [my translation])

Such an ideal was according to Hadot best exemplified in a historical and philosophical model, Socrates. The Socratic “unique essential” is the philosophical “freedom” of the “soul” in the manifestation of its respect for a spiritual principle that guides the secular self (Hadot 1995, 161).

The Socratic ethos remains an inspiring model in our fragmented global environments, Plato’s cave still being filled with a cacophony of contradictory opinions and illusions, while digital social networks amplify the emotional contagion of humanity’s “sad passions”, to use a well-known Spinozian qualification. In order to actualize its heroic program of healthy living, philosophy needs to engage with its desire to be both spiritual and practical; yet “healthy reason” (Kant 1996, 8) cannot be only common sense: it takes extreme individual courage to think and henceforth act as independently, rationally, creatively, and coherently as possible on a daily basis. The philosophical path to healthy wisdom pertains to mental heroism also because, as exemplified by Socrates, truth is never achieved once and for all; it is a never-ending process of attunement that demands a daily effort above normality. Philosophical care is not a sinecure that can be improvised but a difficult practice, one that needs persistent theoretical and practical training.

Kant, in his *Anthropology from a pragmatic point of view*, formulated the heroic ideal of philosophical health along three maxims:

Wisdom, as the idea of a practical use of reason that is perfectly law-like, is no doubt too much to demand of human beings. But also, not even the slightest degree of wisdom can be poured into a man by others; rather he must bring it forth from himself. The precept for reaching it contains three leading maxims: (1) Think for oneself, (2) Think into the place of the other (in communication with human beings), (3) Always think consistently with oneself. (Kant 2007, 307)

Such was according to Kant the heroic ideal of the Enlightenment, also expressed in his famous imperative against mental “cowardice” and existential “immaturity”: “*sapere aude!*”, dare to know. This *dare to know* suggests a *dare to act* (or to refrain from reacting in some rational or emotional circumstances).

Despite the seductive and eminently useful aspect of formulating the ethos of philosophical heroism in the form of law-like maxims or mottos, it is however important to remember that philosophy cannot merely consist of a collection of imperatives facilitating the avoidance of being corrupted by, for example, foolishness,

cowardice, adversity, immaturity, greed, resentment, or social mimicry. Hence the need for philosophical counselors or mentors, at least until we are individually an athlete of the mind. The healthy philosophical healer is dedicated to the service of beings (inclusive of one's own being), which means that personal philosophical health goes along with a protective attitude of deep listening toward the other, notwithstanding the momentary bad influences and mental contagions that such a practice of mundane care may imply. Mental heroism is not only about being able to resist resiliently; it also about intersubjective attention and intellectual empathy: to think into the place of the other. To which one could add: Think into the place of the *Other*, by referring to that creative cosmic otherness or "creative absolute" (de Miranda 2017) that transcends anthropocentric forms of care.

Philosophical Health and the Possible

At least within the crealectic framework (de Miranda 2020), philosophical health is organically connected with the concept of the possible (see ► "[Crealectic Intelligence](#)"). Crealectic intelligence deals with processing realities and imaginaries of novelty and plurality rather than mere contradictions of binary polarities or analytic operations of known bits; its ontological core is the philosophical idea of creation understood ontologically as ubiquitous stream of ultimate possibility (Bergson 1911; Whitehead 1929, see Alfred North Whitehead; de Miranda 2017). In such context, we are not looking at reality as a static and scarce resource but as a moving actualization and interpretation among many others of an invisible source of transformative abundance, a co-creation (see creativity) in which we are dynamically engaged. Crealectic philosophical health is a program of harmonization of our collective capacity to feel, imagine, envision, realize, and co-actualize a world emerging from the cosmological source of the Real as a metaphysical and practical "possibility of possibility" (de Miranda 2020).

As was understood by existentialist philosophers, chief among them Sartre and Heidegger, the

universe is a possibilization furnace. The simultaneously immanent and transcendent – "trans-immanent" (Nancy 1996, 48) – ground of ever-emerging possibilization (*Ermöglichung*) is conceived as *opening for the making-possible* (Heidegger 1995, 364; Heidegger 1996, 244). This cosmological opening may be summarized in a simple modal formula: "It is possible," in which *It* designates the ultimate, all-encompassing being-becoming: "There is a practical consciousness, an 'I can' that underlies and precedes the reflective self-consciousness of the 'I think', but the 'I can' is given and coeval with an 'it can'" (Sinclair 2017, 191). The Surrealists for instance trusted this higher source of creation as they produced their works of art based on letting go of the obsession of controlling consciousness analytically (see surrealism). A philosophical possible originates in the holistic health process by which creative ideation as a property of the universe transmutes (into) coherent realities, regenerative environments of attuned living. Attempts at explaining how this transmutation might be brought about constitutes the very history of philosophy itself, from Plato to Hegel et al., from hermeticism to process philosophy. Philosophy is not the mere logical analysis of truth conditions, but the self-questioning process of thought regarding its own possibilizing and world-making power (see *Creating the future*), with a horizon of healthy well-being, well-doing, and well-belonging.

Current approaches to well-being can be divided into two overarching streams: subjective well-being (SWB) and philosophy as a way of life (PWL). For the sake of simplicity, we may label the first current *hedonic* and the second *eudaimonic*. Subjective well-being (Diener 1984) is often interpreted to mean "experiencing a high level of positive affect, a low level of negative affect, and a high degree of satisfaction" (Deci and Ryan 2008, 1). Because people's reports of being happy and feeling satisfaction or following pleasures in life does not imply that their life is psychically, psychologically, and philosophically balanced, the philosophical health perspective is also concerned with actualizing one's highest virtues, in the notorious spirit of what Aristotle called *eudaimonia* in Book 1 of the *Nicomachean Ethics*.

Eudaimonia is “an activity (*energeia*) that engages and deploys the excellence (*arete*) of a being capable of thought” (Moran 2018, 91). This means that human flourishing cannot be only sensual, a feeling of bliss, but needs to be accompanied by *theoria* or philosophical contemplation. For the Greeks, this meant to be inspired by a divine power (*daimon*), described by Plato in the *Republic* as “the guardian of a man’s life” or “the fulfiller of a man’s choices” (Pachoumi 2013, 49). The Greek concept of eudaimonia suggested that the connection between a human and a personal sense of the divine or the sublime is necessary in the conduct of a good life.

A relation to the sublime or metaphysical divine is indeed an important aspect of philosophical health (see sublime), but the monism of the Creative Real as a Creal of absolute possibility is sufficient to provide for an element of multiplicity and an element of transcendence that remains immanent in the manner of a potential. This is why in philosophical health practice we may refer, instead of eudaimonia, to a principle of *eudynamia*, which is based on the Greek term *dynamis* signifying power, potential, virtual, and possible: “If *eudaimonia* means to have a good relationship with our personal daimon, *eudynamia* means to have a good relationship with the possible” (de Miranda 2021).

The word *eudynamia* appeared sporadically in the German medical corpus of the first half of the eighteenth century, for example, in the encyclopedia of medicine published by Georg Friedrich Most, where it was defined as “good health, good mixture of fluids” (1836, 632). In 1843, a dictionary of Medicine published in Vienna explains the entry Eudynamia with a one-word definition: *Wohlkräftigkeit* (Müller, 120). The German compound *Wohlkräftigkeit* can be translated into English as good health, well-being, and powerfulness. *Eudynamie* was also used in French to describe the physiological and vitalist equilibrium of organic living functions. This lexicology is now more than two hundred years old and the eudynamic signifier has been since abandoned by medical language; following the creation in 2019 of the Philosophical Health International network (<https://philosophical.health>), the

philosophical practitioner Luis de Miranda proposed to resuscitate *eudynamia* from the cemetery of words in order to reinvest it with a philosophical meaning, that of a healing or attuning access to the regenerative realm of multiversal possibility. A eudynamic system or being is one that grows and unfolds in such a way that its creative relationship to the possible remains open, meaningful, and joyful.

Cross-References

- [Creating the Future](#)
- [Creativity](#)
- [Dialectics](#)
- [Sublime](#)
- [Surrealism](#)
- [The Possible in the Life and Work of Alfred North Whitehead](#)
- [Values](#)

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Play

Sandra W. Russ

Department of Psychological Sciences, Case Western Reserve University, Cleveland, OH, USA

Abstract

Pretend play involves generating ideas, treating objects symbolically, and making-up and acting out stories. Expression of emotion and affective themes is an important characteristic of pretend play. Children imagine many different possibilities for events, daily problems, narratives, and fantasies. Many components of creative thought occur in pretend play and set the stage for later creative production, either in daily life or in a chosen career. All of these components contribute to the development of the ability to visualize what is possible and to act on the possible in a creative fashion. Important features of play that contribute to imagining the possible are as follows: role-playing; building scenarios; imagining; expressing feelings and affect themes; acting out problems and possible outcomes; and taking joy in playing/creating. All of these features reflect aspects of cognitive flexibility. Pretend play is important because it helps develop these cognitive and affective representations and enables the child to "play" with them and manipulate them into various combinations. This process should help cognitive flexibility develop, which, in turn, enables visualization of many different possibilities in later life. Research in the area of play and creativity is reviewed. Pretend play is a natural, built-in, venue that is self-reinforcing and universal. Further study of the processes in pretend play and how to facilitate development through play is important for future researchers.

Keywords

Pretend play · Visualizing · Cognitive flexibility · Perspective-taking · Affective processes

Play is a universal phenomenon. Children in all societies engage in play activities (Gaskins et al. 2007). Pretend play especially is important in child development. In pretend play, children imagine many different possibilities for events, daily problems, narratives, and fantasies. They pretend to be different characters and take on the perspective of different people. In most cases of pretend play, children experience positive emotions. Therefore, play is self-reinforcing. Many components of creative thought and emotion occur in pretend play and set the stage for later creative production, either in daily life or in chosen career. All of these components contribute to the development of the ability to visualize what is possible and to act on the possible in a creative fashion.

Definition of Pretend Play

First, we need to define pretend play. There are many definitions of pretend play, but a classic definition by Fein identifies the essence of pretend play. Fein defined pretend play as a symbolic behavior in which “one thing is playfully treated ‘as if’ it were something else” (1987, p. 282). The “as if” feature permits many kinds of activities to be classified as pretend play. Using a yellow block to be the sun, making a castle with magic properties, making up a story about a birthday party with dolls, and pretending to be a famous soccer player while playing the game are all examples of pretend play. Krasnor and Pepler (1980) add the features of nonlinearity, positive affect, intrinsic motivation, and flexibility of thought. Flexibility of thought was also highlighted by Sherrod and Singer (1979) when they identified two cognitive abilities unique to fantasy and pretend play. One was the ability to recombine and integrate stored images as a source of internal stimulation and to divorce these images from reality. A second ability was reinforcement for skillful recombining of images. One can infer that reinforcement was the internal positive affect that accompanied this process. The ability to manipulate internal images and ideas is a kind of cognitive flexibility important in creativity. These images are expressed in

action in pretend play, which, in turn, can give rise to other ideas and scenarios.

Fein (1987), Singer and Singer (1990), and Russ (1993, 2014) all stressed the importance of affect in pretend play. Although it is not an essential characteristic of pretend play (Thompson and Goldstein 2019), it is an important one. Fein (1987) proposed that pretense often involves feelings and emotional intensity, so that affect is often intertwined with pretend play. The manipulation of images and ideas that Sherrod and Singer (1979) thought was unique to pretend play often included affect-themes and emotion-laden content. Fein also stressed the importance of manipulating affective content. She proposed an affect symbol system that stored information about emotional events that is manipulated and worked with in pretend play. These symbols could be real or imagined experiences that are expressed in play. In fact, Fein thought that pretend play was symbolic behavior organized around emotional and motivational issues. Singer and Singer (1990) proposed a cognitive-affective framework for pretend play and thought that play was reinforcing when it permitted expression of positive affect and controlled negative affect. These theories all conclude that affective expression in play contributes to the development of cognitive flexibility, so important in creativity, which involves imagining different possibilities. Children who can express a variety of emotions in the play narrative are able to express more emotion in memories and also in creative stories (Russ and Schafer 2006). In general, they have more access to their own emotions. For example, a child who was given the opportunity to go to a gifted class in a different school wrestled with how he would feel leaving his siblings and friends behind. One can speculate that, as adults, these children will be able to utilize emotions when deciding among different possibilities. For example, in considering a retirement home, a cottage on the beach is an appealing possibility. However, the adult who can visualize and anticipate their own loneliness when they leave their lifelong friends behind will make a more informed decision than the individual who does not.

Play and Visualizing the Possible

What are the features of pretend play that enable thinking about possible future events? Important features are the following: role-playing; building scenarios; imagining; expressing feelings and affect themes; acting out problems and possible outcomes; and taking joy in playing/creating. All of these features reflect aspects of cognitive flexibility.

Role-playing occurs in many forms of pretend play, where children take on the roles of different characters. In solitary play, they might have one doll as the mother and another doll as the child. They then act out various stories. The mother scolds the child for misbehaving while the child cries or apologizes. Thus, the child is taking the perspective of both the mother and the child. In group play, children often play one character and then switch roles with one another. Research supports the association between imagination in pretend play and perspective-taking (See Russ 2014 for a review). This ability to put oneself into the shoes of the other is crucial for emotional understanding, empathy, and, on a larger scale, understanding and anticipating issues in the society. Understanding the experiences of children in poverty, being able to empathize with these children, motivates one to design social policies that ameliorate conditions of poverty.

Children make up stories in play with plots. Understanding cause and effect is important in organizing the story narrative. Children make up different endings and practice with imagining different possibilities. If we do this, then that is a consequence. In the play intervention protocol used in our studies to increase imagination in children's play, the adult asks the child to make up different endings and different plots. For example, over five 30-min sessions, the child plays out different story stems with the play facilitator. One story stem is to have a boy go to the zoo. A story stem calling for more imagination has a girl living in a city under water. A story stem pulling for feelings has a boy losing his dog and feeling sad. In that story, the child usually tries to find the dog. The play facilitator asks the child to make up different endings and feeling states. She plays

with the child, asks questions, and models pretending and expression of feelings. When this story-telling in play protocol was used with children on the autism spectrum, imagination in play increased as did emotional understanding on a different task, when compared with a control group (Doernberg et al. 2020).

Imagination occurs in pretend play. Children use fantasy and imagine different worlds, to different degrees. Root-Bernstein and Root-Bernstein (2006) studied worldplay in children. During worldplay, children create imaginary worlds and characters that continue over a period of time, sometimes for years. They found that creative giftedness in adults was associated with retrospective reports of worldplay in childhood.

In play, many children express current problems, feelings about them, and rehearse different coping strategies and outcomes. For example, children in the hospital play out stories about being ill. They might play out breaking a leg and getting a cast put on. The doctor takes the cast off and the leg is better. Today, themes of the COVID-19 virus occur in children's play. Children have been pretending to use masks and keeping distance. The play monster becomes the virus. Child therapists have used play since the 1930s to help children cope with stress and problems in living. Children can play out their fears and negative emotions in manageable bits so that fears can be extinguished and solutions to problems can be rehearsed (Singer and Singer 1990). There is research evidence that pretend play relates to coping ability. For example, children with better imagination in play could think of more solutions to problems in several different studies (Russ et al. 1999) and could use more coping strategies during a dental procedure (Christiano and Russ 1996).

The fact that pretend play usually involves positive affect and, oftentimes, joy ensures that children will return to play experiences. Because the child can control the pace of the play, even negative themes in play are experienced with positive affect. Children know that play is indeed pretend, and therefore is a safe venue in which to express negative thoughts and feelings. Play remains enjoyable even when children are playing

out stories with negative emotions such as fear of monsters, anger at a parent, or fear of losing a parent. A child might play out a story about mother getting very sick with the virus and going to the hospital. The child is preparing themselves for this possibility.

Cognitive Flexibility

In the process of imagining different themes in play, children are developing cognitive flexibility. Feist in 2011 concluded that one feature of creative scientists is cognitive flexibility, that is, the ability to be nimble, break out of old ways of seeing things, and come up with new combinations of ideas. The same is true of creative artists. Boyd (2009) thought that there were similarities between engaging in play and engaging in the arts. He proposed that play contributes to the development of flexibility of cognitive processes in higher mammals and in children. In play, children engage with patterns of information. Art is similar to play in that it also involves cognitive play with patterns of information. In fact, Boyd theorizes that art evolved from animal play. Boyd also thinks that narratives in memory do not need language, but need representations of events. Fein's theory of affective symbolic representations is consistent with this view and brings affective elements into the picture. Pretend play is important because it helps develop these cognitive and affective representations and enables the child to "play" with them and manipulate them into various combinations. This process should help cognitive flexibility develop, which, in turn, enables visualization of many different possibilities in later life.

A recent study by Meyer et al. (2019) found that creative adults were better at imagining distant scenarios than less creative individuals. In addition, creative experts were more likely than other professionals to activate a particular brain area (dorsomedial subsystem) when imagining future situations.

One aspect of cognitive flexibility is the ability to go back and forth between logical thinking and thinking that is more divergent and associative. Vartanian (2019) reviewed the neurological

correlates of creative thinking that support two different thinking processes. Neuroimaging studies have identified the default-mode network as the brain system involved in spontaneous, self-generated thought. This is the type of thought important in open-ended tasks requiring generating a variety of ideas. It is also the neurological network involved in incubation – the process of mind wandering and letting one's thoughts roam. Incubation is an important stage of the creative process where remote associations can occur and lead to creative ideas and solutions to problems. The executive control network is involved in logical thought processes. Vartanian (2019) suggests that neurological findings suggest better ability in creative individuals to switch back and forth between spontaneous thought and evaluative thought processes than less creative individuals. Russ (2020) suggested that pretend play is a venue where children engage in this switching activity and become comfortable with it. In play, there is a free flow of ideation that is then integrated into a narrative. These sequences happen over and over in pretend play. The research support for the association between pretend play and creativity suggests that, because there are so many overlapping processes, similar neurological processes could be involved. This is an important area for future research.

Empirical Support of Associations Between Pretend Play and Creativity

A large number of carefully controlled studies have found an association between pretend play and creativity tasks (See Russ 2014, 2016 for reviews). Pretend play relates to divergent thinking in many studies with preschool and school-age children. In a retrospective study, Root-Bernstein and Root-Bernstein (2006) found that a higher proportion of MacArthur "genius" fellows reported having imaginary worlds in childhood than a control group. Taylor (1999) has found that many creative adults had imaginary friends in childhood.

In the Russ and colleagues research program, we have consistently found significant

associations between imagination and affect expression in play and creativity measures. One advantage of these studies is that the same play task and coding system (Affect in Play Scale; APS, 1993; 2014) were used to measure the play. For children from 6 to 10, puppets and blocks are presented to the child and they are instructed to play anyway they like for 5 min. For children from 4 to 5, a preschool version of the task is used, Affect in Play Scale-Preschool (APS-P), where a variety of toys are presented and the instructions are more structured with initial engagement by the adult evaluator. The play is videotaped and rated by trained coders. The same coding system is used for both the APS and APS-P. A few studies using these play measures are described below. Transforming blocks into objects such as cars or monsters would be coded as imagination. Fantasy themes would also be included in the imagination rating. The coherence of the sequences in the story is reflected in the organization rating. Affective themes such as happy eating, getting hurt, hitting another character, and worrying about monsters would all be coded as affect themes. Enjoyment and engagement in the play would be rated on a comfort scale.

In an early study by Russ and Grossman-McKee (1990), both imagination and quality of the organization of fantasy significantly related to the Alternate Uses Task in 60 first and second grade children. Divergent thinking also was significantly related to frequency of affect in the play narrative and variety of affect categories. These correlations were independent of verbal intelligence. The finding that the relationship was independent of intelligence is important and is consistent with findings in the creativity literature. Other studies with the APS and APS-P with different examiners, different child populations, and in different research labs have found similar results. Both affective process and imagination and organization of the story in play were associated with divergent thinking, independent of intelligence.

Hoffmann and Russ (2012) investigated the relationship between play and storytelling in 61 girls and found that play related to creativity

in storytelling, independent of verbal ability. For the storytelling measure, using the consensus scoring system where stories were evaluated by several raters, imagination in pretend play positively related to creativity in storytelling. Children rated as more imaginative in pretend play were also rated as telling more creative stories. Children who expressed more positive affect during pretend play also tended to tell stories rated as more creative. Also of note, divergent thinking was significantly related to creativity in storytelling. Those children who had higher divergent thinking scores also tended to have higher amounts of affect, larger varieties of affect, and greater amounts of fantasy in the stories they told. These children were also more likely to be rated as having stories that were more likeable, novel, creative, and imaginative. Originality during divergent thinking was also positively related to storytelling affect expression and fantasy, as well as ratings of creativity and novelty. These results suggest a common creative ability across creative tasks, which has implications for the development of creative writing abilities. In a recent study by Fehr and Russ (2016) with preschool children using the APS-P, pretend play was related to divergent thinking and to creativity in storytelling. Divergent thinking and storytelling were also related. Thus, there were similar associations occurred between play, divergent thinking, and storytelling in preschool children and in school-aged children. Through play, it is possible that children develop a mindset for thinking about future possibilities.

Stability of Associations

There have been two longitudinal studies with the APS that have found stability of the associations between pretend play ability and divergent thinking, independent of verbal intelligence. Russ et al. (1999) found that imagination in play of first and second grade children predicted divergent thinking 4 years later. This association continued into high school.

In a second longitudinal study with a different population of girls, early imagination in play

again predicted divergent thinking 4 years later (Wallace and Russ 2015). Positive affect predicted originality. Additional follow-up after 7 years into high school found continued significant associations between imagination in play and divergent thinking.

The importance of the longitudinal results is twofold. First, they suggest that the cognitive and affective processes involved in pretend play and in divergent thinking are trait-like, and stable over time. This ability gives the individual an advantage in successfully engaging in creative activities as an adult. Second, they address the methodological issues raised by Lillard et al. (2013) about play and creativity research. One of their main criticisms of the research in the literature was that the same experimenters carried out the play and creativity tasks. However, in these longitudinal studies, there were different researchers involved and scoring was blind. Even in many of the concurrent studies, there were different researchers and scoring was blind.

Summary

Pretend play experiences provide practice with processes important in creativity. These processes involve imagining different possibilities, forming narratives, generating many ideas, combining and recombining different forms of ideation such as nonverbal images, ideas, affective symbolic representations, memories, and taking on different perspectives. Playing with and expressing these processes contributes to the development of cognitive flexibility, which is crucial for envisioning future possibilities. Scholars of scientific thought and artistic production conclude that cognitive flexibility is important for creative work. Although there are many ways in which children can develop these attributes, pretend play is a natural, built-in, venue that is self-reinforcing and universal. As children develop these abilities, they learn to envision possible future scenarios and accompanying emotions. Further study of the processes in pretend play and how to facilitate development through play is important for future researchers.

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Poetry

Mark Freeman

College of the Holy Cross, Worcester, MA, USA

Abstract

Poetry is intimately and necessarily tied to the possible – on at least four, possibly five, levels: the semantic, the referential, the musical, the ontological, and, possibly, the transcendent. Regarding the (possibility of a) fifth level: Sometimes, all of the processes implicated in the four other levels identified come together in such a way as to provide an intimation, or even an experience, of the sacred. Some readers may

be put off by, or even reject, this possibility out of their own naturalistic commitments. This may be especially so for those enmeshed in the discipline of psychology given its avowedly naturalistic commitments and its reluctance to entertain those possibilities that cast these commitments into question. To those adhering to such commitments, it would seem extra important simply to say: It is possible. The method of proceeding in this entry will be to work through the first four levels identified. In doing so, it should become clear that the transcendent level is but a short step from all that has preceded it. Bearing these levels in mind, it should also be clear that the discipline of psychology would benefit greatly by considering the ways in which poetry and poetic processes might inform and shape psychological inquiry.

Keywords

Imagination · Metaphor · Musicality · Poetry · Ontological referential · Semantic · Transcendent

Poetry and the Possible

There is no need to offer a formal definition of poetry. It would just be one, there are lots of other definitions that might be brought forth, and there is no reason to try to determine which one(s) to privilege. For present purposes, it is more important to identify what poetry generally *does*, what its functions are, and how it enters the world of experience; and what it does, at its core is intimately and necessarily tied to the possible – on at least four, possibly five, levels. The first and most basic level is *semantic*: Poetry employs language, especially metaphorical language, in order to generate new meanings. The second level is *referential*: Poetry can open up and “unconceal” the world, allowing us to see and feel reality in fuller measure. The third level is *musical*: Poetic language is not only about meaning, but sound – the sound of particular words, their rhythm and cadence and melody. The fourth level is

ontological: In opening up and unconcealing the world, it does much the same for us as readers, allowing us to experience our own interiority and depths. As for the fifth – or the possibility of the fifth – it is *transcendent*: Sometimes, all of the processes just enumerated come together in such a way as to provide an intimation, or even an experience, of the sacred. For those readers who may be put off by such talk, opting instead to remain on land (so to speak), all that should be said is: It is possible. Indeed, this *has* been said, most visibly in a chapter titled “The possibility of transcendence” from *The Priority of the Other* (Freeman 2014a). This possibility cannot simply be asserted; reasons need to be provided for why it ought to be entertained. The method of proceeding in this entry will be to work through the first four levels. In doing so, it should become clear that this fifth level, oriented toward the transcendent, is but a short step from all that has preceded it. It should also be clear that the discipline of psychology would benefit greatly by considering the ways in which poetry and poetic processes might inform and shape psychological inquiry.

Also in *The Priority of the Other*, it was suggested that the “default” condition of the human condition – especially that particular form of it that we have come to find in the contemporary world – may be characterized by “ordinary oblivion,” that is, a kind of inattentiveness or “caughtupness” that serves to obscure the world. Arguably, it has always been this way to some degree; we humans are readily lulled into the comfort of familiarity, routine, “common sense,” and sensing. This tendency has been intensified in our time by the great wealth of things that distract us further from beholding what is actually there, before us. Poetry may therefore be more necessary than ever.

Seamus Heaney, in *The Redress of Poetry* (1995), refers to Simone Weil’s extraordinary book *Gravity and Grace* (1997 [1952]), which “is informed by the idea of counterweighting, of balancing out the forces, of redress – tilting the scales of reality toward some transcendent equilibrium.” So too for the activity of poetry:

There is a tendency to place a counter-reality in the scales – a reality which may be only imagined but which nevertheless has weight because it is imagined within the gravitational pull of the actual and can therefore hold its own and balance out against the historical situation. This redressing effect of poetry comes from its being a glimpsed alternative, a revelation of potential that is denied or constantly threatened by circumstances. And sometimes, of course, it happens that such a revelation, once enshrined in the poem, remains as a standard for the poet, so that he or she must submit to the strain of bearing witness in his or her own life to the plane of consciousness established in the poem. (pp. 3-4)

As Heaney goes on to suggest, “As long as the coordinates of the imagined thing correspond to those of the world we live in and endure, poetry is fulfilling its counterweighting function. It becomes another truth to which we can have recourse, before which we can know ourselves in a more fully empowered way” (p. 8).

So far, we have been introduced to the contours of poetry, to the kind of large counterweighting functions it promotes. But how does it actually work? For Heaney, “There is a sensation both of arrival and of prospect, so that one does indeed seem to ‘recover a past’ and ‘prefigure a future’, and thereby to complete the circle of one’s being” (p. 9). How does it do this? And what is its significance for our understanding of the human condition? I now turn to the various levels, or dimensions, of poetry and poetic language in order to begin to address these large questions.

The Semantic: Metaphorical Language and *Poiesis*

In a remarkable chapter titled “The metaphorical process as cognition, imagination, and feeling,” the philosopher Paul Ricoeur is concerned with “metaphor’s claim to yield some true insight about reality” (1978, p. 143), in the context of poetry and beyond. Central to his perspective is the “semantic role of imagination” (p. 145) and the idea that “resemblance,” of the sort frequently associated with metaphor, is a function of “semantic innovation” (p. 146) via the predication of proximity between therefore distant words. “In other words, metaphorical meaning does not

merely consist of a semantic clash but of the new predicative meaning which emerges from the collapse of the literal meaning, that is, from the collapse of the meaning which obtains if we rely only on the common or usual lexical values of our words" (p. 146). What we are thus considering is "the transition from literal incongruence to metaphorical congruence" (p. 147), that "things or ideas which were remote appear now as close. Resemblance ultimately is nothing else than this rapprochement which reveals a generic kinship between heterogeneous ideas" (p. 147).

Ricoeur goes on to draw on Kant's concept of productive imagination by referring to "predicative assimilation," a process that entails "*making* similar, that is, semantically proximate, the terms that the metaphorical utterance brings together" (p. 148). As he explains further,

In order that a metaphor obtains, one must continue to identify the previous incompatibility through the new compatibility. The predicative assimilation involves, in that way, a specific kind of tension which is not so much between a subject and a predicate as between semantic incongruence and congruence. The insight into likeness is the perception of the conflict between the previous incompatibility and the new compatibility. "Remoteness" is preserved within "proximity." To see the like is to see the same in spite of, and through, the different. . . . Imagination, accordingly, is this ability to produce new kinds by assimilation and to produce them not above the differences, as in the concept, but in spite of and through the differences. (p. 148)

Another way to frame the kind of imagination Ricoeur is speaking of here is simply to invoke the idea of *poiesis* – essentially meaning-making. And it is precisely here, in the context of *poiesis*, that we can begin to reflect on the idea of the possible within poetry. For what is being suggested in the account Ricoeur has provided is the idea that, however "solidified" meanings may become, especially through the routines and repetitions of ordinary discourse, language always bears within it a kind of potential, one that can be released and actualized through the semantic role of imagination as it occurs in the creation of metaphor. This process is by no means limited to poetry; as Lakoff and Johnson have argued in their classic text *Metaphors We Live By* (1980), the metaphorical process is part and parcel of the

poetic moment of the human condition itself. In poetry, this process is frequently brought to the fore in such a way as to highlight and intensify our sense of the possible – that is, our sense not only of what language can be but also, and more fundamentally, what *reality* can be.

The Referential: Seeing the World in its Potential

It is but a short step from this first level to the second. "At first glance," Ricoeur (1978) writes, "poetry refers to nothing but itself." The poetic function of language would thus seem to run counter to the referential function of language, which prevails in ordinary, descriptive language. Partially valid though this basic line of thinking may be, Ricoeur seeks to challenge it by highlighting the idea that in poetic language the referential function is not obliterated or suppressed but transformed, such that the sphere of reality being referred to is emergent. As he writes,

Poetic language is no less about reality than any other use of language but refers to it by the means of a complex strategy which implies, as an essential component, a suspension and seemingly an abolition of the ordinary reference attached to descriptive language. This suspension, however, is only the negative condition of a second-order reference, of an indirect reference built on the ruins of the direct reference. This reference is called second-order reference only with respect to the primacy of the reference of ordinary language. For, in another respect, it constitutes the primordial reference to the extent that it suggests, reveals, unconceals – or whatever you say – the deep structures of reality to which we are related as mortals who are born into this world and who dwell in it for a while. (p. 153)

Notice the connection being made here between metaphor and the transformation of reality:

In the same way as the self-abolition of literal sense is the negative condition for the emergence of the metaphorical sense, the suspension of the reference proper to ordinary descriptive language is the negative condition for the emergence of a more radical way of looking at things. (pp. 153–154)

In sum: "In the same way as the metaphorical sense not only abolishes but preserves the literal

sense, the metaphorical reference maintains the ordinary vision in tension with the new one it suggests" (p. 154). It is precisely this tension that yields "a more radical way of looking at things." And it is precisely this more radical way of looking at, and *experiencing*, things that confirm and extend the sense of the possible.

The Musical: Sound, Sonority, and Sensuousness

"It is almost as if we sing to one another all day," Robert Pinsky (1998) has said. In the routine exchanges we have with others, even in the inner dialogues we have with ourselves, there are accents and intonations, inflections, and rhythms. "We do not need to be taught such things," Pinsky adds; "if they were taught in school, we would find them hard and make a mess of them" (p. 3). So it is for "sentence sounds" as well:

Because we have learned to deal with the sound patterns organically, for practical goals, from before we can remember, without reflection or instruction or conscious analysis, we all produce the sounds, and understand them, with great efficiency and subtle nuance. Because of that skill, acquired like the ability to walk and run, we already have finely developed powers that let us appreciate the sound of even an isolated single line of poetry – even if we have very little idea of the meaning. (p. 4)

According to Pinsky, therefore, "The hearing-knowledge we bring to a line of poetry is a knowledge of patterns in speech we have known to hear since we were infants" (p. 6). Along the lines being drawn, poetry is not only a linguistic or semantic art but "a vocal, which is to say a bodily, art. The medium of poetry is a human body: the column of air inside the chest, shaped into signifying sounds in the larynx and the mouth. In this sense, poetry is just as physical and bodily an art as dancing" (p. 8) – and, of course, music. Indeed, there is a fine line, and perhaps at times *no* line, between poetry and music. Consider spoken word poetry, or some forms of hip-hop, or, for that matter, some of Bob Dylan's or Leonard Cohen's songs. The aforementioned semantic dimension remains important in all of these. And this semantic dimension can be intensified, given additional

flesh and form, in and through the music that suffuses it. It's a quite remarkable process: Sometimes, when the lyrics and music line up just right, there can emerge a mysterious sense of concordance, belonging, "fit."

One might ask in this context: At what point does poetry become music? It may seem like a stretch to say so, but I am tempted to say: just about always. I say "just about" mainly because there are some forms of poetry that are highly conceptual, even anti-musical, in a way. But insofar as words are being marshalled not only to *mean* but to *speak*, and to speak in such a way that meter and a kind of proto-melody emerges, musicality is intrinsic to poetic language and, in turn, to the world this language refers to. Indeed, the musicality of poetry deepens and complicates the dimension of referentiality, for if the music may be said to refer, it does so in a much more oblique way than language and thus opens up yet another layer of the possible, one that seeks to articulate and express the sensuous resonances of embodied beings in the world, now being felt anew, thereby disclosing the theretofore concealed depths within us.

The Ontological: Dwelling in the (Infinite) Depths

Yves Bonnefoy (1989), reflecting on the power of poetry, is especially attuned to "the moment when the young reader opens passionately a great book and finds words, of course, but also things and people, and the horizon, and the sky: in short, a whole world given at once to his thirst" (p. 162). For the author of these words, the experience may be more intense still; for, "this world which cuts itself off from the world seems to the person who creates it not only more satisfying than the first but also more real" (p. 164). Bonnefoy goes on to speak of the "impression of a reality at last fully incarnate, which comes to us, paradoxically, through words which have turned away from incarnation" (p. 164). As for the result, it is the opportunity "to bear witness to an existence beyond, to a being, to a plenitude they don't even know how to name" (p. 167). The situation

is a quite remarkable one: words, language, products of discrete cultural worlds, sometimes become imbued with such power and passion as to awaken an “existence beyond,” a magnetic “plenitude” that bears within it intimations of a truly extra-ordinary reality.

One may be reminded here of the wonderful passage from *The Varieties of Religious Experience* (James 1982 [1902]) that articulates the “deeper significance” we sometimes experience with art.

This sense of deeper significance is not confined to rational propositions. Single words, and conjunctions of words, effects of light on land and sea, odors and musical sounds, all bring it when the mind is tuned aright. Most of us can remember the strangely moving power of passages in certain poems read when we were young, irrational doorways as they were through which the mystery of fact, the wildness and the pang of life, stole into our hearts and thrilled them. The words have now perhaps become mere polished surfaces for us; but lyric poetry and music are alive and significant only in proportion as they fetch these vague vistas of a life continuous with our own, beckoning and inviting, yet ever eluding our pursuit. We are alive or dead to the eternal inner message of the arts according as we have lost this mystical susceptibility. (pp. 382–383)

On the basis of what has been said thus far, the “vistas” about which James is speaking here would seem to be not just “continuous” with our own life but a part of it. We may not recognize this; we may be so caught up in the ordinary oblivion of our own being that we lose this “mystical susceptibility” and, in turn, a sense of the depth of our inner life. Poetry can at times revive this susceptibility and reawaken this depth. In doing so, it can serve as an apt reminder that there is “more” to the world, both outer and inner, than meets the eye. Seen from one angle, this “more” – or, as James (1982 [1902]) puts it, “MORE” – signals a “higher part” of our being. But it also signals the sense “*that this higher part is conterminous and continuous with a MORE of the same quality, which is operative in the universe of him, which he can keep in working touch with, and in a fashion get on board with when all his lower being has gone to pieces in the wreck*”

(p. 508). Following James, the MORE “is experienced both *within* and *without*, the ‘higher part’ that is felt to exist within us being, at one and the same time, intimately and necessarily related to what is Other” (Freeman 2014a, p. 202). But that is not all. For even amidst this ostensibly bi-directional energy, there may emerge an intimation of “belonging,” even “a kind of *homecoming*, wherein one’s very belongingness in and to the world is revealed in and through its otherness.” And, “Insofar as the world is revealed as home, as the place where I belong, I am ‘at one’ with it, able, if only momentarily, to move beyond the condition of ordinary oblivion against which the experience is juxtaposed” (p. 171; see also Freeman 2018). This moving beyond may also entail an intimation of the beyond. In doing so, it thus suggests the distinct possibility that this world I inhabit and to which I belong bears within it a still higher sphere of the MORE and a still deeper sense of the possible. How might we understand it? Should we bother?

The Transcendent: The Possibility of Other Worlds

It is not critical that we move any farther in this direction. In experiencing beauty, Elaine Scarry (1999) has noted – including the beauty found in many poems – the object in question not only “fills the mind” but “invites the search for something beyond itself, something larger or something of the same scale with which it needs to be brought into relation.” Phenomenologically speaking, therefore, “beautiful things always carry greetings from other worlds within them.” Nevertheless, whether this “something” she is referring to here truly exists in some immortal, transcendent sphere is, for her, ultimately irrelevant: “Even when the claim on behalf of immortality is gone, many of the same qualities – plenitude, inclusion – are the outcome.” This is by way of saying that, “what happens there is no immortal realm behind the beautiful person or thing is just what happens when there is an immortal realm behind the

person or thing: the perceiver is led to a more capacious regard for the world” (pp. 47–48). Is Scarry right about this? Is the experience of the “immortalist” actually the same as the non-immortalist? Again, should we just “leave well enough alone” and shelve this last (possible) sphere of the poetically possible?

I believe the issue is worth pursuing further, precisely because doing so brings us to another dimension of the possible, one that my own discipline of psychology tends to rule out *a priori* owing to its purely naturalistic account of the human condition. So let us continue. At a most basic level, Jay Parini (2008) has noted, “Words are symbols, and – as such – have resonance beyond their literal meanings. They gesture in directions that cannot be pinned down, and strike chords in the unconscious mind.” And these chords, Parini suggests, contain within them a spiritual dimension. “This all gets very murky,” he acknowledges; “many people do not believe in a world of ‘spirit,’ a word that smacks of dogma to them. . . . Yet poets persist in allowing for a spiritual world, in making associations that one might call ‘religious’ in their poems, linking back to a source of inspiration, to God or whatever (in the words of Paul Tillich) one describes as one’s ultimate concerns.” Once again, it is not necessary to move in this “murky” direction: “one could . . . adequately consider the spiritual dimensions of poetry in psychological terms as well, regarding its project as an attempt to link the conscious mind to deeper, even unconscious, levels of experience” (p. 179). For Parini and many others, though, the conviction that something *more* (MORE) is at work remains, and while their faith commitments may be a part of it, they are not the whole of it. Immanent within the experience itself is an intimation of the transcendent, the sacred, especially the sense that the very givenness of the world bespeaks a gift, resonant with divinity.

Let me fill out this picture a bit more by turning to my friend Bob Cording’s (2019) “explanation” for why he writes and why he links together poetry and theology. I share his words not because he is my friend (for some 35 years), but because he

has taught me a great deal, through his writing and the many exchanges we have had through the years, about the nature of poetry. “I write, first and foremost, to honor the mystery of creation.” More specifically:

I must try to shape a language that will take into account a world we did not make, being faithful to that essential mystery; at the same time, my language must try to faithfully record the terrifying and painful contradictions of human experience; and finally it must do so while remaining open to the intrinsic joy of being. (p. 18)

As Cording goes on to note, in more explicitly theological language,

My task of late has been to evoke what I would call the primordial intuitions of Christianity. . . . that we live in a world we did not create; that God’s immanent presence is capable of breaking in on us at any moment; that most of the time we cannot “taste and see” that presence because we live in a world of self-reflecting mirrors; that by attention alone – “that attention that is so full the ‘I’ disappears,” as Simone Weil says, can we live in the world but outside of our existing conceptions of it. (p. 19)

Some readers are bound to find this statement audacious – first because of Cording’s referring to “God’s immanent presence” and second because he raises the possibility of living in the world “outside our existing conceptions of it.” I don’t know that we need to bring God into the picture – unless by “God” we are simply referring to that intimation of fullness and wholeness that arises within the experience itself. In this context, I follow the lead of the novelist and philosopher Iris Murdoch (1970), who, among others, tries to clear a space for the transcendent without (explicitly) bringing God into the picture. Her reason:

There is . . . something in the serious attempt to look compassionately at human things which automatically suggests that “there is more than this.” The “there is more than this,” if it is not to be corrupted by some sort of quasi-theological finality, must remain a very tiny spark of insight, something with, as it were, a metaphysical position but no metaphysical form. But it seems to me that the spark is real, and that great art is evidence of its reality. (p. 71)

This position may be protested too. Cording, fan of Murdoch though he is, might find her

reluctance to bring God into the picture a problematic gap. He might also suggest that, her own reticence notwithstanding, she is talking about God by any other name. Others may protest for an entirely different reason, and accuse Murdoch of adding in mystical baggage where none is needed. Strictly speaking, they are right: none is needed. But something of the sort she is proposing may still be called for given what art, in this case, poetry, sometimes discloses to us. As George Steiner (1989) adds in this context, one can only offer a “wager” on transcendence, nothing more. That’s okay, though; we are only dealing with the possible here, not the necessary or the inevitable. As for encountering the world apart from our conceptions of it, consider Simone Weil’s (1997 [1952]) fervent wish in this context: “May I disappear in order that those things that I see may become perfect in their beauty from the very fact that they are no longer things that I see.” A qualification: “I do not in the least wish that this created world should fade from my view, but that it should no longer be to me personally that it shows itself.” The ultimate goal: “To see a landscape as it is when I am not there.” On the face of it, this would seem impossible. “When I am in any place, I disturb the silence of heaven and earth by my breathing and the beating of my heart” (p. 37). But might it not be possible, still, to “unself” oneself, as Murdoch (1970) might put it, in such a way as to behold what is truly there? It would be easy enough to simply rule out this possibility. But maybe we shouldn’t. Indeed, might it not be the case that the “tiny spark of insight” about which Murdoch speaks embodies just this going-beyond-conceptions, such that the world bursts forth in its theretofore beclouded radiance? And might it not be the case, in addition, that this radiant bursting-forth, never to end, never to be exhausted, discloses the palpable reality of the infinite – which, ultimately, is nothing other than the living, ever-bountiful reality of possibility itself?

What we are considering here may be seen as a kind of “reenactment” of “the primordial moment of the transcendent.” We could abandon the project of searching for it. But if Cording (2019) is right, we shouldn’t. “If we give up that search we

also give up the world’s fullness” (p. 10) and, with it, our very sense of the possible, given to us along with the bountiful, inexhaustible world.

Summary

Poetry and Psychology: Toward the Psychological Humanities

In view of the five levels of poetry and poetic processes considered herein, poetry ought to receive more attention as an object of psychological inquiry than it generally has. In addition to serving as a significant object of inquiry, however, poetry and poetic processes might also serve as an orienting framework for undertaking psychological inquiry, especially those modes of it that seek to practice fidelity to the complex, often messy, sometimes beautiful stuff that comprises the human condition (Freeman 1993, 1999, 2000). Such inquiry might be thought of as “poetic science” (Freeman 2007, 2011, 2014b). Some of it, however, might also be considered a vehicle inaugurating modes of conceptualizing psychological inquiry that take us beyond science, toward the psychological humanities, and thereby transform the discipline of psychology itself (Freeman 2019, 2020; Sugarman and Martin 2020; Teo 2017).

Cross-References

- [Aesthetics](#)
- [Awe](#)
- [Creativity](#)
- [Imagination](#)
- [Spirituality](#)
- [Sublime](#)

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Political Imagination

Stephen Duncombe¹ and Silas Harrebye²

¹New York University, New York, NY, USA

²Roskilde University, Roskilde, Denmark

Abstract

Political imagination can be defined as a way of transcending political reality, and thus challenging conformity. It can be used to visualize possible futures and to bring to life a real but distant past. It can be a consciously applied strategy or an unconscious way of processing desire. At a time when current politics seems woefully inadequate to face the monumental challenges of bigotry, demagoguery, inequality, climate change, and disease we face today, a revitalization of the political imagination may be necessary, not only to find new solutions but to fundamentally reexplore and reform the frames within which we participate and collaborate in finding these new solutions. Artists, activists, thinkers, and researchers, especially, have a responsibility to use their imagination to not only describe the world as it is and critique its shortcomings but to also conjure up visions of the world as it could be. In sum, *realpolitik* must be joined with a *dreampolitik* of political imagination.

Keywords

Political imagination · Utopia · Dystopia · Art · Avant-Garde · Vanguard

And your young shall see visions, and your old shall dream dreams.

-- Acts 2:17, King James Bible

Introduction: Politics of the Possible and Impossible

Politics is often characterized not by imagination but by pragmatism. “Politics is the art of the possible,” Germany’s nineteenth century “Iron

Chancellor” Otto von Bismarck argued in 1867 while making the case for a practical-minded *realpolitik*. And at the end of the twentieth century, Francis Fukuyama (1992) concluded that we can now no longer imagine a world at the same time different and better than the one ushered in with the end of the Cold War and the victory of liberal democracy. This is an understandable position as those in power have an interest in maintaining the status quo that keeps them in power. As British Prime Minister Margaret Thatcher was fond of saying in response to critics of her neoliberal rule: “There Is No Alternative.”

This lack of imagination infects even well-meaning politicians from relatively well-functioning democracies. The stability which is a trademark for the welfare state also means that creative disruption is typically frowned upon. Recently, a universal basic income and the establishment of a second chamber in Parliament consisting of randomly selected citizens have both been proposed in Denmark. But to many politicians, these proposals are seen as completely “utopian,” that is to say, impossible and therefore ridiculous. Former Danish climate minister Lars Christian Lilleholt characteristically argued against the idea of a permanent citizens assembly (May 2019) simply by pointing to how the *current* system works:

Citizens have every opportunity to influence who runs for Parliament. This is how democracy works in Denmark. To create a citizens assembly which would have a say in climate policies, I have a very hard time imagining.

The minister makes two symptomatic fallacies. Firstly, he argues that because things are as they are, they cannot and should not be any different. This circular reasoning is rooted in classical conservative thinking: what is, and has been, should also always be. Secondly, this is a case of self-confession: Lilleholt has “a very hard time imagining” what is being proposed. That may be the case. But his lack of imagination should not disempower other people’s dreams and initiative. In reality, unfortunately, it often does (Harrebye 2019: 1120–121).

Recently, the global pandemic of Covid-19 has been said to reopen the political space for

philosophers, religious leaders, artists, activists, and others to fundamentally reimagine the values and principles on which to build a new world, exploiting the potential hidden in every crisis. But the politics of imagination is not a recent phenomenon. For as long as there have been those that counsel a sober recognition of the possible, there has been a tradition of envisioning the impossible, and history is full of examples – both inspiring and terrifying – of how the imagination has been used politically.

Definition: What Is Political Imagination?

Politics, as narrowly defined by the Cambridge dictionary, is: “the relationship within a group or organization that allows particular people to have power over others.” (Cambridge, def. 2). So, it can be said that politics constitutes activities involved in getting and using power in public life. *Imagination*, on the other hand, is the “ability to form pictures in your mind,” and the “ability to think of new ideas” (Cambridge, def. 1 and 2). This is the capability of the mind to be creative and resourceful in ways that are neither reliant on the reality one is faced with at present nor limited by personal experience. These new pictures in your mind, or what are commonly called *visions*, can be spatially or temporally distant, improbable, or even impossible. The transforming potential of imagination is that the “move” these visions require and lead to changes in our understanding of the present and how we act within it and towards it. *Political imagination* therefore, at one and the same time, is both political and personal, social and individual. It can be defined as a way of transcending political reality, and thus challenging conformity. It can be used to visualize possible futures and to bring to life a real but distant past. It can be a consciously applied strategy or an unconscious way of processing desire. In a broad sense, political imagination is meant to “designate all those imaginative processes by which collective life is symbolically experienced and this experience mobilised in

view of achieving political aims.” (Glaveanu and Saint Laurent 2015: 559).

By enabling us to project an image of the world, “imagination allows us to perceive certain ends as deserving more or less priority over others and, more particularly, to envisage new ends” (Ferrara 2011, 40). Applied imagination can be seen in business in the entrepreneur who has a bold and daring plan for innovation. Or, in science, with the researcher who dares to follow a hypothesis that may seem ridiculous or fruitless. In politics, it is seen in activists who trust their vision of a world not yet made to guide their actions in the here and now, yet also understand the current context and possesses the skills to make their vision seen by others in the present. The political imaginer is both prophet and evangelist.

History: Utopia as a Model of Political Imagination

Political imagination has a long history. In the West, the *Bible* provided images of mythical lands flowing with milk and honey, and glimpses of a world beyond where the lion lays down with the lamb. Even earlier, Plato laid out his model for an ideal political society in *The Republic*. But perhaps the best-known work of political imagination is *Utopia*, written 500 years ago by Thomas More. Because More’s *Utopia* is an example of political imagination, an instruction guide on how to imagine politically, and literally names the practice, it is worth looking at in some depth.

The imaginary world that More describes is everything his sixteenth century European home was not. The Island of Utopia has a democratically elected government and priesthood, where women can attain positions of power; there is public health and education and Utopians are guaranteed the freedom of speech and religion; Utopia sends foreign aid to the poor of other countries; living and labor are rationally planned for the good of all and, perhaps most utopian of all: there are no lawyers (More was a lawyer himself.) At the root of Utopia, the source from which everything grows, is the shared wealth and

the community of property. The quality of this society is best described thus:

Every house has a door to the street and another to the garden. The doors, which are made with two leaves, open easily and swing shut of their own accord, freely letting anyone in (for there is no private property). (More 1949, 31)

Utopia, however, is more than just a fictive vision of a world turned upside down, and for a book that gives birth to such a commonly used word, *Utopia* is an exceedingly curious text, full of contradictions, riddles, and paradoxes. The grandest – and best known – being the title itself. “Utopia” is a fabricated word, made up by More from the Greek words *ou*, meaning “not,” and *topos*, meaning “place.” Utopia is a place which is, literally, No-Place. Over and over in his book, in all sorts of ways, More creates a vision of an ideal world and then tells us it is not possible. And this paradox is at the heart of More’s understanding of political imagination.

The power of Utopia lies in its ability to be possible and impossible, real and unreal, all at the same time. Through telling the reader a story and leading them on a journey, More convinces them that Utopia is a real place. He gives specific details on how the Utopians live, what their mating customs are, and how their cities are constructed. The world that More sketches is so lucid, so convincing, that the reader imagines they are there. Like watching a good movie or seeing a great performance, they lose themselves into this other world. What is foreign becomes familiar and what is unnatural is naturalized. The reader is not just *told* that an alternative model for structuring society *could* be possible, they are *shown* and thus *feel* that it *is* possible; More is a master of affect. Through his vivid writing, he provides his reader with a vision of another, better world. And then More takes it away by calling the whole thing No-Place.

The problem with most Utopias, be they prophesied by holy men, designed by Vanguard parties, or imposed by political dictators, is that the political imaginaries they propose are presented as The Answer. All the imagining and planning is done by the enlightened few and the job of the rest of the people is to get used to

Political Imagination,

Fig. 1 Map from First Edition of *Utopia*, public domain



it. More solves this problem by refusing us the possibility to believe in *his* Utopia. He takes the reader there – lets them see it and feel it – but then reminds them that this place is just imaginary. But it is too late for one to go home; we have been exposed to the idea of an alternative and our desire to live in such a world has been stoked. We now believe that another world is possible. At this point, we are faced with a choice: we either go home to our world, knowing that something better has been imagined and wallow in despair, or we

imagine a better world ourselves, our own Utopias. *Utopia* is not a rational plan so much as it is a creative prompt: an *imagination machine*. When Fredric Jameson notes that, “utopia emerges at the moment of the suspension of the political” (2004, p. 43), he is stressing how day-to-day politics is a delimiting factor. But when those limits of the political are suspended, as they are through acts of religious, philosophical, and artistic imagination, utopia can become a map for a new political terrain.

Research: The Field of Imagination

Research on political imagination occurs, often in indirect ways, in different scientific domains: in psychology (e.g., Freud 1899; Vygotsky 2004), in anthropology (Riisgaard and Thomassen 2016), in sociology (e.g., Beck 2011; Taylor 2004), in political science (e.g., Browne and Diehl 2019), in philosophy (e.g., Bottici and Challand 2011; Bottici 2019), organizational theory (e.g., Laloux 2014), and in social movement studies (e.g., Duncombe 2007; Haiven and Khasnabish 2014; Solnit 2006). While there are too many research endeavors to do justice to here, several are worthy of special attention.

The conception of imagination that emerges from the German philosopher Hannah Arendt's work on the interrelation between freedom, action, and judgment is one that stresses the capacities for imagination to allow our thinking to "go visiting" outside the political sphere bounded by individuality and experience. As she writes, critical thinking,

goes on in isolation, but by the force of imagination it makes the others present and thus moves in a space that is potentially public, open to all sides; in other words, it adopts the position of Kant's world citizen. To think with an enlarged mentality means that one trains one's imagination to go visiting. (Arendt 1992, 43)

However, imagination needs limits provided by the realities in which one lives. It must be tied to reality, as it is only within this "bounded imagination" that political action is ensured to remain morally grounded (Tyner 2017).

In his book on envisioning real utopias, Erik Olin Wright analyzes cases of institutional innovation that "embody in one way or another emancipatory alternatives to the dominant forms of social organization" (2009, 1). Wright shows how the strategic elements are dependent on historical settings and complex political systems. The best thing we can do, he argues, is to build social empowerment through experimental processes where we "continually test and retest the limits of possibility and try, as best as we can, to create new institutions which expand the limits of themselves" (Wright 2009: 281). In doing so we

not only *envision* utopias – and for Wright they are always plural – but contribute to making them real.

For Benedict Anderson, imagination was essential for the creation of political "realities" like the modern nation state as other, previous, social formations based on religion or kinship crumbled. In his celebrated volume, *Imagined Communities* (1991), Anderson argues that this national imagination is, in part, enabled by forms of mass communication like newspapers and novels, printed in national vernacular languages, which provide a cultural space through which people who may never see or know one another can imagine themselves as having a "national consciousness" and "formed, in their secular particular, visible invisibility, the embryo of the nationally imagined community" (Anderson 1991: 44).

Queer theorist José Muñoz stresses the importance of imagination as a way of creating new possibilities for "minoritarian" people like LGBTQ+ people of color as they renegotiate and reimagine mainstream culture. This "project of world making," as he calls it, "offers a utopian blueprint for a possible future while, at the same time, staging a new political formation in the present." It is often through creative art practices that these worlds are imagined and shared (Muñoz 1999, 200).

Inspiration: Art as Model for Political Imagination

As Anderson and Muñoz remind us, no definition of political imagination is complete without a discussion of the use of art and culture as means of imagining. The poet Audre Lorde writes, "I could name at least ten ideas I would have found intolerable or incomprehensible and frightening, except as they came after dreams and poems." (Lorde 1984, 3). With these words, Lorde imparts two important lessons: The first is that fear is the warden of the imagination. (As the Danish climate minister Lilleholt showed us.) What is unfamiliar, uncommon, or unimaginable is deeply frightening; it upsets our expectations of how the world is

supposed to operate. Lorde's second lesson, however, is equally important: Art can free the imagination from this prison.

It has long been a role of avant garde art to expand the limits of political imagination. The Surrealist André Breton, for example, considered himself a revolutionary: He was a member of the French Communist Party, co-authored a "Manifesto for an Independent Revolutionary Art" with Leon Trotsky, and considered imagination one of the most important tools to bring about revolution. Breton believed that the enemy of imagination is thought. Not thought per se, but conscious thought that has been rationalized and socialized; thought that has been taught to categorize, judge, edit, and correct. As Breton writes in the first *Surrealist Manifesto*:

Under the pretense of civilization and progress, we have managed to banish from the mind everything that might rightly or wrongly be termed superstition, or fancy; forbidden is any kind of search for the truth which is not in conformance with accepted practices. (Breton 1972, 10)

So how to escape the conformity of accepted practices and ideas? For Breton, the path lay through the unconscious. He put great store in dreams as a way of sidestepping around consciousness, and thus providing alternative perspectives and solutions. "Can't the dream also be used in solving the fundamental questions of life?", he asks (Breton 1972: 12). In terms of artistic practice, Breton, as a writer, counseled a technique of automatic writing in which one sits down and writes, fast and furious, before the censors of consciousness can enter (along with the importance of dreams, this method of free association was another of Freud's influences). Surrealist visual artists like Hans Arp, André Masson, and even the non-Surrealist, but deeply mystical, Hilma af Klint practiced "automatic" drawing and painting: Letting their unconscious guide their hand across a canvas. Max Ernst and Salvador Dalí painted imaginary landscapes and objects pulled from their dreams (a practice continued by artists such as the filmmaker David Lynch today). All these art practices were creative efforts to slip by the censors of consciousness and tap into senses and experiences unavailable in the

rational, waking life. As Breton concludes, "Surrealism, such as I conceive of it, asserts our complete nonconformism clearly enough so that there can be no question of translating it, at the trial of the real world, as evidence for the defense" (Breton 1972: 47). Alas, the forces of "the real world" were to also transform Surrealism into a respected art movement and an endless stream of posters, tote bags, and melting clocks sold in museum gift shops.

Other artists of the avant garde were less interested in escaping the strictures of the old "real world" that constrained imagination than they were in using their imagination to create models of a new one. Vladimir Tatlin's *Monument to the Third International* is an instructive example. Tatlin's tower was commissioned soon after the revolution in Russia, in 1919, by The Department of Artistic Work of the People's Commissariat for Enlightenment. The tower was to stand 400 meters tall, almost a quarter higher than the Eiffel Tower, and straddle the Neva river in central Petrograd. Tilting at the same angle as the Earth (23.5 degrees), and taking the idea of "revolution" quite literally, the tower was constructed of three internal revolving levels. At the bottom was a massive glass and steel cube to house the Soviet legislative assemblies, rotating once a year. Above this was a pyramid, where the executive committees would meet, revolving once a month. And over this was a cylinder which held information and propaganda services, that spun once a day. This cylinder was to be faced with a giant screen to show the latest cultural and political news, and equipped with massive loudspeakers to broadcast revolutionary news. At the very top of Tatlin's tower was a hemisphere to house radio equipment, topped by radio towers capable of transmitting world-wide, and a projector with the ability to project propaganda images on the clouds.

Needless to say, Tatlin's Tower was never built. There was not enough steel in all of Russia to construct it, and even if there had been the material to erect it, it is unclear whether it was stable enough to stand. The monument's impracticality was recognized and criticized at the time by Tatlin's cultural and political

Political Imagination,
Fig. 2 Photo of Tatlin's
 Tower, public domain



comrades. Leon Trotsky had this to say, reflecting upon the monument in his book *Literature and Revolution*, “I remember seeing once, when a child, a wooden temple built in a beer bottle. This fired my imagination, but I did not ask myself at that time what it was for...” But now, regarding Tatlin’s monument, he writes: “I cannot refrain from the question: What is it for?” (Trotsky 1957: 247–8). Trotsky, or course, unknowingly answered his own question: What is Tatlin’s monument for? “*To fire the imagination!*” Tatlin himself, as much as he wrapped himself in the utilitarian rhetoric of the revolutionary Russian avant garde, was clear that his design could have another function. The ideal of

“uniting purely artistic forms with purely utilitarian aims,” Tatlin writes in his proclamation *Art into Technology*, is to create “models which stimulate inventions in the business of creating a new world.” (cited in Lodden 1983, 65). It is in this vein that the contemporary Congolese artist Bodys Isek Kingelez, who creates large dream-city installations out of scraps of garbage, says that, “A visionary is someone who dreams of what doesn’t exist yet. He has to make feasible what he has seen.” (Duman 2003).

Avant garde art is not the only cultural arena in which political imagination is expressed. Popular culture – genre literature, songs, movies, TV dramas, video games, social media, and even

advertising – are also platforms for political imagination. One strain of popular culture, science fiction (and fantasy fiction more generally) has been a particularly fruitful field for political imaginings. Arguably the first work of science fiction, Mary Shelley's *Frankenstein*, written in 1818, was a way to imagine a world of technological innovation and question its consequences. Science fiction has attracted political writers such as the socialist H.G. Wells and the libertarian Robert Heinlein and, more recently, popular SF writers such as Ursula Le Guin and Octavia Butler have used the genre as a way to imagine a world outside of patriarchy and white supremacy. These pop culture fantasy imaginings can be dystopian, as is the vision of the mechanized capitalist city in Fritz Lange's 1927 film *Metropolis*, or more recently in the TV series *A Handmaid's Tale* (2017–2018). Or they can be utopian as in the ideal of the Afro-Futurist City-State of Wakanda in the film *Black Panther* (2018). Such fictional imaginings can even lead to real-world actions. For example, fans of the popular Harry Potter series of books and films created an activist group, The Harry Potter Alliance, to take concrete steps to combat gender inequality, climate change, and other issues.

Even sport can be an arena for political imagination. In 2014, Iran played South Korea for a spot in the soccer World Cup. Since women are not allowed to attend games in Iran, two female fans, Fatma Iktasari and Shabnam Kazimi, had to dress up as men in order to get in. Once they were in and the game was underway, they ditched their disguises and made it clear to everyone that real women were joining the happy occasion. The stunt went viral on social media. The intervention not only functioned as a *dilemma action* exposing police powerlessness, it also became a symbol of hope, helping women all around Iran to visibly imagine a world where all citizens, regardless of their gender, could watch a soccer match out in the open (Popovic 2015, 108–110). More generally, sport – like art – is a space of play and playfulness within which to experience and imagine a world operating according to an alternative set of principles.

Critiques: The Dark Side of Political Imagination

Several specters, however, haunt political imagination. Reading what is written above one might well imagine that imagination is almost always on the side of the angels. But probably the most impactful political imagination has been enacted by repressive regimes. Nazism, to take an extreme but influential example, was nothing if not an act of political imagination made manifest. How else to explain the fantasy of a racially homogeneous state and a glorious Third Reich all dressed up with sign, symbol, story, and spectacle? Similarly, the excesses of Stalin's purges and China's Cultural Revolution were equal parts cynical power manipulations and the articulation of an imaginary "pure" politics. Arguably, the most imaginative politics at the moment is that of the far right with their dreams of national greatness, e.g., US President Donald Trump's "Make America Great Again," and nightmares of foreign contagion.

If one problem of political imagination has to do with its effective, repressive implementation, another possible pitfall swings in the opposite direction: That imagination serves as a sort of cultural palliative that retards its political application. Karl Marx located this dilemma in the Utopian visions that reside within religious traditions, describing this "inverted consciousness of the world" as "the sigh of the oppressed creature, the heart of a heartless world, and the soul of soulless conditions. It is the opium of the people." (Marx 1844, np). Stuart Hall and his colleagues at the Centre for Contemporary Cultural Studies took up this critique later, recognizing the positive power of people's ability to create their own resistant (sub)cultures while at the same time identifying the problem of what they called the "magical resolution" of real-world problems through cultural expression (Hall and Jefferson 1993).

It is important to recognize, however, that opium does not just dull pain or put one into a stupor, but can also aid in the dreaming of new realities to be built. Such was the purpose of Dr. Martin Luther King's famous "I Have A Dream" speech delivered in 1963. King begins

his speech with a vivid and chilling account of the nightmare of white supremacy, but then, about half way through, his rhetoric changes as he describes a phantasmagorical dreamworld in which his, and all children, “will not be judged by the color of their skin but by the content of their character.” (King 1963: np). The function of King’s speech was not only to reveal current reality but to imagine the future, inspiring the Civil Rights Movement and giving them a vision to work toward. To paraphrase Jacques Rancière, the revolution starts when the workers stop resting at night to be ready for another day at work, and start dreaming instead (Rancière 1991).

Conclusion: Real and Dreampolitik

At a time when current politics seems woefully inadequate to face the monumental challenges of bigotry, demagoguery, inequality, climate change, and disease we face today, a revitalization of the political imagination may be necessary, not only to find new solutions but to fundamentally re-explore and reform the frames within which we participate and collaborate in finding these new solutions. Artists, activists, thinkers, and researchers, especially, have a responsibility to use their imagination to not only describe the world as it is and critique its shortcomings, but to also conjure up visions of the world as it could be. In sum, the *realpolitik* of Bismark must be joined with a *dreampolitik* of political imagination. This may already be happening. With accelerated communications technology and the social media revolution, political imagination seems to be more fertile and widespread than ever. It is still to be seen, however, whether the overstimulation of information and impressions leads to new and more political imagination or whether there is a saturation point that, if crossed, leads to political apathy and stagnation of imagination or worse: conspiracy thinking, confirmation bias, and delusional politics. For it must also always be remembered that political imagination has led to history’s greatest accomplishments as well as its worst horrors. The qualities and the intentions of our visions matter.

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Polyphony

Ingunn Johanne Ness

Faculty of Psychology, Centre for the Science of Learning and Technology (SLATE), University of Bergen, Bergen, Norway

Abstract

The concept of polyphony is often associated with music and refers to multiple independent lines of a melody sounding at once. Further, polyphony is also a concept used by linguistics to describe how different voices and views are simultaneously occurring in a text or in a conversation. Polyphony is an attractive term that has tended to be used in a relatively unobtrusive way explaining a variety of phenomena connected to multiple voices in different contexts. However, one of the most interesting things about the concept of polyphony is that it is so far-reaching: It can be applied to a wide

range of phenomena. This entry defines and explores the concept with a particular emphasis on polyphony and the possible based on a Bakhtinian understanding of the concept, which includes a broadening of one's mind and an exploration of the possible through dialogue, acknowledging each other's different perspectives.

Keywords

Polyphony · Bakhtin · Linguistics · The possible · Dialogism · Experience · Sociocultural psychology

Introduction

While some people think of music when they hear the term polyphony, others think of language and linguistics. The concept of polyphony means literally “many voices” and in music this refers to multiple independent lines of a melody sounding at the same time. However, polyphony is also a concept used by linguistics to describe how different voices and views simultaneously occur in a text or in a conversation.

This entry will start with defining and exploring the concept and then move further into a Bakhtinian notion of polyphony, which includes broadening of one's mind and an exploration of the possible through dialogue, acknowledging each other's different perspectives. Finally, the entry will give an example on how the concept of polyphony was used as an analytical tool in studying interdisciplinary teams (Ness and Dysthe 2020). The team members were engaging in dialogue, broadening their minds, and exploring the possible in the search for developing new ideas and innovation.

Polyphony in Music

In music polyphony is regarded as a multipart musical set technique, where the single voices are equal (Hjorthaug 1999). Polyphonic pieces of music are very horizontal, and the individual voices strive for independence in such a way that

they at the same time tend to have different rhythms and melodic countermovements. In polyphonic music, two or more simultaneous melodic lines are perceived as independent even though they are related. Polyphonic music was a highlight of the Renaissance and Baroque (Kindem 1985), but has also been revived in contemporary music by Bela Bartok and Fartein Valen, among others. An example on a musical form based on polyphony is a “fuge.” In a fuge there will be at least two independent voices and one of the voices will start playing a short theme alone. Then another voice will pick up the same theme while the previous voice plays a contrapuntal accompaniment and the fuge will develop further through how the different voices then pick up on the same theme in different ways. Fuge means “flight.”

Polyphony in Linguistics

Moving on to a different field, linguistics, we find polyphony also to be a much-used term. In linguistics, the belief or idea that a statement has only one sender is strongly opposed. It was with the Russian language philosopher Bakhtin’s literary studies that the unique nature of the speaking subject was seriously questioned. The concept of dialogue and polyphony, which were used by Bakhtin, his followers, and translators, covers the phenomenon on how several voices are expressed in a discourse. However according to Fløttum (1998), polyphony considered as polyphonic is a very vague characteristic, since this will allow at least three interpretations: (1) Polyphony can, firstly, denote that several voices manifest themselves in successive utterances. There is nothing particularly revolutionary about that. (2) Further, we have the second use of polyphony in that special case where you have voice mediality in the speech. It is about repeating and integrating the recipient’s voice into the utterance. This kind of polyphony has further developed the Geneva School and named it diaphony (Roulet et al. 1985). (3) Finally, polyphony can be understood as a manifestation of multiple voices in one and the same utterance. This entry will, in particular, pay attention to the

latter, which is a Bakhtinian understanding of the concept.

Some Central Concepts of Bakhtin: Dialogue, Utterances, Voice and Polyphony, Heteroglossia, and Multivoicedness

When we are looking at polyphony and multiple voices in a Bakhtinian understanding, we also need to include some information on other central concepts in order to contextualize polyphony. Dialogue, utterances, and voice are all notions that Bakhtin wrote about and must be seen in relation to polyphony. In addition, there are two other concepts, very similar to polyphony – those of heteroglossia and multivoicedness.

Starting with dialogue – this comprises both an ontological and an epistemological understanding. Dialogue is, according to Bakhtin, both a fact of life and an ideal to strive for at the same time as it also includes how meaning, knowledge, and creativity are developed in the tension between different voices. Such a notion of dialogue is apt to examine meaning-making processes and the development of new knowledge and understanding that often emerge in the tension between different perspectives (Dysthe 2001; Dysthe and Igland 2001; Morson and Emerson 1990) and was perhaps the most central concept in the works of Bakhtin. When people engage in dialogue, they reveal their voices. The concept of “voice” includes all central aspects of a person and every thought and belief and world view constitutes the person’s voice. “A person enters into dialogue as an integral voice. He participates in it not only with his thoughts but with his fate and with his entire individuality” (Bakhtin 1984, p. 293). Closely connected to voice, is utterance.

An utterance is often seen as the basic notion in Bakhtin’s theories and has several characteristics. According to Hazen (1993), every utterance will be determined by four characteristics: interchange of speaking subjects, consummation (it has to be thematically accomplished through the speakers intention), expressiveness (speaker’s subjective emotional relation toward the object and meaning

of the content of the utterance), and, finally, the utterance has to be addressed to somebody (a particular addressee is being taken into consideration). In this way we can say that utterances are the basic building blocks in a dialogue and what Bakhtin called “the unit for speech communication” (Bakhtin 1986, p. 75). The aim of the dialogue, Bakhtin says, is “to open up and take in the foreign receptionist and try to understand it” (Skorgen 2006, p. 40). In Bakhtin’s view, the utterance will always be expressed from a point of view, a *Weltanschauung*, that doesn’t come out of nothing – it is undetectable from its context of culture (science, arts, politics, etc.) and from the context of a particular individual personal situation. Utterances are embodied acts of voicing our words and the bodily feelings they arouse in others and ourselves (Shotter 2008). What follows in a conversation will consequently be connected to the responsivity of living and growing, embodied beings, responsive both to each other and to the othernesses in their surroundings. This represents a switch from thinking about language in terms of how patterns of already spoken words might be interpreted by us as to their meaning on one hand, to thinking about the spontaneous, bodily effects on us of words in their speaking on the other hand. The polyphonic and thus dialogic utterance is influenced by the expected response and can therefore relate to it in a provocative, stimulating, conveying, distorting, or anticipatory way. Thus, there are no neutral utterances (Bakhtin 1986). Any utterance is always a response to other utterances. The dialogic utterances are always related utterances in the past that can be either confirmed, denied, or avoided at the same time as they are related to what the future can bring from its own based on replies and corresponding utterances.

Utterances exist in every dialogue. As utterances are basic in dialogue, dialogue can be understood as the basic model of language as discursive communication. A sequence of utterances is a dialogue of speaking subjects or voices that respond to former utterances and anticipate the future ones. Put in another way, when people engage in dialogue, we are always responding to

something and we are in constant meaning making.

When it comes to polyphony, Bakhtin never explicitly defines the term but the polyphonic novel is a central theme in *Problems of Dostoevsky’s Poetics*, which is primarily about the author’s position in the text (which will be elaborated later in this entry). Another concept often associated with polyphony, is “heteroglossia” and describes diversity of speech styles in a language. According to Dysthe (forthcoming, 2021) heteroglossia deals with how individual voices are shaped by the languages in different social groups. The term signals that when a person talks, his or her words are expressions of the person’s background, context, personality, view of the world, meanings, and values. The third term, “multivoicedness,” is often easier for most people immediately to relate to since the word itself perhaps is more familiar. Dysthe (forthcoming, 2021) claims that both multivoicedness and polyphony presupposes a dialogic sense of truth with many possibilities – in opposition to a monologic conception of truth, which will have one truth as the only one possible.

Polyphony and the Possible

Based on the previous section, we see how Bakhtin’s perception of utterances and dialogue is closely connected to polyphony. In addition, polyphony has an explicit emphasis on the acknowledgment of different voices. This is helpful in order to avoid a mindset that is monological and dominated by one single perspective. Polyphony literally means “many voiced” and was used to describe literary writing that managed to liberate the voice of characters from the authorial or narratorial voice. Bakhtin’s term is thus normative in the sense that it implies that no authority is dominating and everybody’s voice is equally important. Further, polyphony is always open-ended. This means that it is about seeking surprises and exploring the possible in the sense that no preexisting “scripts” exist. In the following we shall investigate this closer and will start with looking at Bakhtin’s analysis of Dostoevsky’s

Poetics, which revealed an emphasis on the possible through the open-endedness that is characteristic for the notion of polyphony.

Problems of Dostoevsky's Poetics

Bakhtin explored polyphony and dialogue through examining Dostoyevsky's Poetics. He claimed that Dostoyevsky created his novels in full dialogue with the characters and that he listened to the characters' voices.

Bakhtin (1984) suggests that what unfolds in Dostoevsky's novels is a plurality of independent and unmerged voices and consciousnesses, a genuine polyphony of fully valid voices. He thought that Dostoevsky was the first genuine exponent of the fully polyphonic novel since such a novel contained a plurality of unmerged consciousnesses and the character's voice was equally as important as the author's own voice. What unfolds in Dostoevsky's work is not a multitude of characters and fates in a single objective world - but it is rather a plurality of consciousnesses, with equal rights and each with his own world, combined but are not merged in the unity of the event (Bakhtin 1984). The important points here are those indicating that each voice is independent even though they are "combined but not merged" in "the unity of the event" (Shotter 2008).

Bakhtin saw the potential in narratives regarding how to realize polyphony. He meant that in narratives a plurality of independent voices could be realized together with the equally valid voices of the author and other characters. The polyphony that is possible in narratives "is a representation of human languages or voices that are not reduced into, or suppressed by, a single authoritative voice: a representation of the inescapably dialogical quality of human life at its best" (Booth 1984, p. xxii).

It was when analyzing *Problems of Dostoevsky's Poetics*, Bakhtin (1984) referred to polyphony as a new kind of artistic thinking. According to Hazen (1993) this was due to the fact that Dostoevsky went against the traditional narration, which was characterized by privileging harmony and single voicedness. But when reading Dostoevsky, Bakhtin thought that the reader of

Dostoevsky's novels would not have the impression that he or she would be dealing with one single, dominating author, but is instead faced with a multiplicity of authors. This multiplicity creates many possibilities for what is going to happen. Thus it is open-ended. The possible implies that there is no predetermined product or result, instead it is an open process.

In this way we see how polyphony also is closely connected to creativity through the open exploration of possibilities since authors as well as readers meet surprises in the novel. According to Morson and Emerson (1990, pp. 257–267) the characters surprise their creators because a part of creativity in novel writing comes through exposing characters and their ideas to circumstances and situations that will expose them severely (Barnhart 2005). Both discovery and exploration of what is possible becomes a major ingredient of creativity and is connected to using one's imagination. However, being imaginative will always happen in relation to others consciousnesses.

The idea lives not in one person's isolated individual consciousness – if it remains there only, it degenerates and dies. The idea begins to live, that is, to take shape, to develop, to find and renew its verbal expression, to give birth to new ideas, only when it enters into genuine dialogic relationships with other ideas, with the ideas of *others*. Human thought becomes genuine thought, that is, an idea, only under conditions of living contact with another and alien thought, a thought embodied in someone else's voice, that is, in someone else's consciousness expressed in discourse. At this point of contact between voice-consciousness the idea is born and lives. (Bakhtin 1984, pp. 87–88)

In this quote we see how the idea is not within one person's head – instead it is coming to live in between consciousnesses. Bakhtin's view is that in creation of ideas, the dialogical relations are necessary. Different points of view can develop further, and new ones emerge in the meeting between different perspectives. The idea – as Bakhtin also saw in Dostoevsky – is not a subjective, individual, or psychological formation with "permanent resident rights in a person's head; no, the idea is interindividual and intersubjective – the realm of its existence is not individual consciousness but dialogic communion between consciousnesses" (Bakhtin 1984, pp. 87–88).

In an open exploration of the possible, different voices meet – and independent of context, there will be tension between different voices and perspectives. This is why it is necessary that the voices acknowledge this tension and give room for each other (Ness and Dysthe 2020). For Bakhtin, this implies that participants in a dialogue must have an open mind in relation to others. In any imaginative and creative process, dialogical relations are necessary. Different points of view can develop further and new ones emerge in the meeting between different perspectives.

We have so far looked at the concept of polyphony and how to understand it. We will now turn to a more practical aspect and how this concept also can be used as an analytical tool in research investigating creative processes and possibility thinking in interdisciplinary teams.

Polyphony as an Analytical Tool in Studying Interdisciplinary Teams Working with Developing Innovative Ideas

The concept of polyphony has also proven to be relevant as an analytical tool in research on interdisciplinary teams working with developing innovative ideas (Ness 2017). It was constructive in exploring the relational processes in interdisciplinary teams and to understand how the tension between different disciplines and perspectives could be seen as a creative force and result in new knowledge and ideas.

The main research question in the study was: What characterizes creative knowledge processes in interdisciplinary teams working with developing innovative ideas? The study investigated these processes in three interdisciplinary teams consisting of team members from different disciplinary backgrounds. These different backgrounds were ensuring different perspectives and “voices” in the teams. The team members met at the boundaries of their different disciplines to build new ideas and knowledge in collaboration. The idea was that every team member came into the teams with a specific expertise that would not

be accessible to the team otherwise. Then they were supposed to share their individual expertise and knowledge with each other and learn from each other in order for the team as a whole to get a broader common knowledge base that could work as a point of departure for imagining new ideas together in collaboration. True collaboration involved dialogue and to listen to each other and not argue for one’s own views but instead listen and build on each other’s views.

The project went over a period of 2 years and was inspired by ethnography (Geertz 1983). This meant that the researcher spent time in the teams in order to get close to the communication and the interaction in the teams and get a first-hand impression of the processes. Thus, the process of idea development was studied from the beginning to the end, allowing identification of patterns and characteristics across the teams. The fieldwork involved participant observations, focus group interviews, and individual interviews with the team leaders.

Results from the study showed that the team members shared the individual special competencies they brought to the team and learnt from each other (for more see Ness and Riese 2015; Ness and Søreide 2014). The more the different team members learnt from each other, the more innovative ideas they developed. The many perspectives and voices became a polyphony that made them capable of challenging what they knew and in this way the team members could broaden the possible. This kind of possibility thinking was related to the teams’ imagination, and was stimulated by the existence of multiple voices and perspectives within the team.

By confronting and challenging each other, team members seemed to deliberately emphasize the differences, as a means to bring out and combine different perspectives. However, if the perspectives were too far apart and the differences too strong, the team members could not come to an understanding. Then the discussion became unproductive as it failed to generate specific ideas. Each member of the team needed to take into account other’s perspectives, and if this was not possible other team members tried to negotiate

and “translate” the differences to create a shared understanding (Ness and Søreide 2014). Further, to succeed with broadening the team members’ minds and explore different perspectives when they engaged in possibility thinking, it was crucial that the different team members acknowledged each other and didn’t allow any particular voice to become dominant. When the team members met at the boundaries of their disciplines, effective cross-disciplinary collaboration appeared to require that participants could communicate and understand each other and consequently have an open mind. Indeed, according to Bakhtin, the idea begins to live, take shape, to develop, and find its verbal expression only when it enters into genuine dialogic relationships with other ideas. It was clear that when the team members talked with each other and got to know each other, they gradually were making sense of what was said. Such discussions and negotiations involved curiosity toward each other’s viewpoints and acknowledging the differences. If the team members did not acknowledge each other’s knowledge, it would not be a genuine dialogic relationship and then the team might fail to build on the many different perspectives, which also then inhibited the creative processes and exploration of the possible. The polyphony term in a Bakhtinian notion includes this acknowledging aspect – an open dialogue enabled creative processes instead of suppressing it and limiting the chance for innovative ideas to be generated. However, a genuine dialogic relationship is difficult to achieve since often there will be competing voices and people tend to have their own agendas. There can also be a matter of power in the sense that some team members’ opinions can be seen as more “valid” than others – especially if the matter under discussion is closer to some members’ expertise than others. That is why it is so important that teams working with developing innovation are aware of the pitfalls and the importance of activating all voices in order to use the polyphony as a tool to explore the possible.

The findings in the project underscore that team members need to learn from each other and challenge the existing knowledge in the tension between different perspectives in order to be

creative, and the polyphony concept was very constructive in shedding light on this dialogical understanding of knowledge development.

Conclusion and Summary

The concept of polyphony is a notion used in different contexts. Often polyphony is talked about in music, meaning many melodic tones occurring simultaneously and independently. We also find the concept much used in linguistics and how several voices are expressed in a discourse. Polyphony may also designate both the many voices that exist in a group, and the ideal of none being silenced and none allowed to dominate. In this entry we had a particular emphasis on polyphony and the possible with a Bakhtinian approach as the point of departure. In a Bakhtinian view, participants in a dialogue must have an open mind to others as it is in the tension between different voices knowledge and meaning is created. Indeed, in creation of ideas, the dialogical relations are necessary. Different points of view can develop further, and new ones emerge in the meeting between different perspectives. In this way the possible is broadened through developing new ideas. The term polyphony thus served as an analytical tool in a study on how interdisciplinary teams were developing new and innovative knowledge in the tension between different voices. The term polyphony is popular and has been used in a relatively unobtrusive way. This is, however, also one of the most interesting things about the concept: it is rather far-reaching and can be applied to a wide range of phenomena involving diversity and possibility thinking.

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Position Exchange Theory

Jack Martin¹ and Alex T. Gillespie²

¹Department of Psychology, Simon Fraser University, Burnaby, BC, Canada

²Department of Psychological and Behavioural Science, London School of Economics, London, UK

Abstract

Position exchange theory (PET) explains how our life-long immersion within and movement between a wide variety of sociocultural positions contributes to our development as persons with unique capabilities of self- and other understanding, perspective taking, agency, imagination, and creativity. An important part of our sociocultural constitution as persons involves the occupation and taking up of social psychological positions and perspectives within, and extending beyond, the interactive exchanges, routines, practices, and traditions in which we are embedded and which define our ways of life. By using the symbolic resources of language, human beings are able to distance themselves from the here and now and engage in reflection that might involve consideration and perhaps enactment of alternative ways of acting. However, PET stresses the importance of recognizing that even the most sophisticated acts of imagination and creativity have their origins in and are sustained by actual social, physical position exchanges experienced throughout our lives. At the heart of position exchange theory is the fostering of reversibility, whether in children's games like hide-and-seek or in the thrust-and-parry of academic debate. We do not need to imagine ourselves entirely out of our life experiences with others and create possibility de novo. The reversibility that flows from position exchange ensures that our interactivity with others, their actions, lives, and circumstances sets the horizon of our own possibility.

Keywords

Position exchange · Perspective taking ·
Agency · Creativity · Imagination ·
Sociocultural constitution · Personhood

A Brief Introduction to Position Exchange Theory

Human life involves an almost constant exchange of positions. Some of these are solo and physical, such as moving from standing to sitting, exercising to relaxing, waking to sleeping, and vice versa. Others are communal and combine physical and social aspects, such as transitioning between giving and receiving, talking and listening, or performing and watching. Many of these exchanges involve moving and switching between different roles and phases in routine, often reciprocal, sequences of interactivity with others and frequently make use of objects—throwing and catching a ball, hiding and searching behind household features and furnishings in a children's game of hide-and-seek, and sending and receiving emails. Some of these exchanges occur within relatively brief intervals of time, such as stating and listening to opinions voiced in a seminar discussion. Others can stretch over entire lives during which children become adults and novices become experts. So ubiquitous are position exchanges in the personal and communal lives of persons that it is very easy to overlook the profound significance and importance they carry with respect to our life-long development as the kinds of people we become, replete with uniquely human capacities to understand our selves and others, take different perspectives, and exercise agency, imagination, and creativity.

One way of realizing the significance of position exchange for our development as persons living with others is to reflect on how we understand other people and their actions. How, for example, do we anticipate and react to the positions and movements of other drivers when piloting our automobiles? How do we know when and how to take our turns in everyday conversations and activities with others in our

families and circles of friends or coworkers? The general answer that position exchange theory (PET) provides to such questions is that we understand what is happening and what to do in these circumstances because we have previous experiences of being positioned and learning to position ourselves in similar and related situations.

We human beings have developed societies, cultures, and ways of life within which our participation requires us to move across a wide variety of positions in an enormous number of routines and practices in which we engage with other people. Our cultures and societies are replete with conventions, customs, and artifacts that support and assist us to enter into the kinds of positions and changes of position that support our development as intersubjective persons aware of the positions that other people occupy. Perhaps the most important of these are human languages that consist of symbols and semiotic forms that allow human users to distance and separate themselves from their immediate physical and social positions and entertain positions and possibilities removed from situational contexts and constraints. Using language to speak effectively to others requires a speaker to take the perspective of her audience; the speaker attempts to speak on the premise of the listener (Rommetveit 1974). As competent language users, when we think or speak to ourselves, we can do so in ways that move us well beyond our immediate physical and social confines by recalling or linking our thoughts to the words and perspectives of others in different situations or by imaginatively generating possibilities through an ongoing inner conversation.

By participating actively in our communities, societies, and cultures, and availing ourselves of powerful artifacts such as language, we acquire and equip ourselves with the unique social psychological capabilities of persons. A very important part of our sociocultural constitution as persons involves the occupation and taking up of social psychological positions and perspectives within, and extending beyond, the interactive exchanges, routines, practices, and traditions in which we are embedded and which define our ways of life. By using the symbolic resources of

language, human beings are able to distance themselves from the here and now and engage in reflection that might involve consideration and perhaps enactment of alternative ways of acting (Gillespie 2018). However, no matter how abstracted our positions and perspectives become, it is important to recognize that such abstracted forms have their origins in actual social, physical position exchanges experienced earlier in our lives.

Imagination is a powerful, defining capability of personhood, yet it cannot develop apart from concrete experiences of physical-material and social positioning (Zittoun and Gillespie 2016). Even as adults already immersed in vicarious and imaginative forms of perspective taking, it is not easy to alter our customary perspectives and actions. To recognize and alter our habitual ways of interacting with others, it often is necessary to once again experience the physicality and materiality of actual social interactions and exchanges. In particular, many extant programs for broadening and deepening our relations with different others seem to require this kind of social, physical actuality as a basis for advancing our active participation within increasingly diverse and hopefully more inclusive communities (Anner 1995).

Position exchange theory was developed initially by the American philosopher and social psychologist, George Herbert Mead, although Mead himself never used the term. In 2005, Alex Gillespie and Jack Martin published separate articles in the *Journal for the Theory of Social Behaviour* in which they interpreted Mead's earlier writings by placing position and perspective exchange at the center of Mead's social, developmental psychology. Since then, together and separately, Martin and Gillespie (2010, 2013; Gillespie 2012; Gillespie and Martin 2014; Zittoun and Gillespie 2015a) have investigated and theorized in detail the ways in which position exchange enables human beings to develop person-defining capabilities such as perspective taking, agency, creativity, and imagination. The development and exercise of these capabilities, individually and collectively, allow us continuously to envision and enact possibilities that change ourselves, our communities, and the

world. More recently, others have begun to add their own studies and interpretations of position exchange, contributing to an expanding literature that explores further its contribution to human creativity and possibility.

PET, Perspective Taking, and Agency

As biological human beings, persons are born with phylogenetically selected predispositions to orient to the world, especially to other persons, and to remember some of what we experience. These dispositions are present only in the most rudimentary forms at birth and continue to develop throughout individual lives in interaction with the world and others in it (Martin and Gillespie 2010). In early infancy, children experience pre-reflectively. For example, after breastfeeding or observing the movement of a crib mobile, the infant typically is able to reorient to these objects. As growth and experience accumulate, the infant's abilities to orient and reorient to the objects in the world around itself increase dramatically. Cued and assisted by the bodily and facial movements of caregivers, young children follow the gazes of others and begin to use others' reactions as a basis for acting themselves. With frequent and increasing interaction in routine position exchanges with others, children learn to coordinate their participation in simple practices that are repeated over and over again—for example, giving and receiving objects, touching and being touched, observing and performing simple actions, and playing games such as peekaboo and hide-and-seek. As Mead (1934) observed, such routine, coordinated interpersonal exchanges involve taking up related social positions in children's games such as hider and seeker (Gillespie 2006).

These experiences of position exchange enable the young child to recall and anticipate being in one position (e.g., seeker) while occupying the other position (e.g., hider). Each social position sustains a distinct perspective or orientation to act in a particular way. It is the movement between these social positions that enables the child to integrate the two perspectives—anticipating

where the hider might be when in the role of seeker and imagining the other with similar and related anticipations when in the role of hider. A perspective, understood as an orientation and inclination to act, is an experience. One cannot literally take someone else's experience. However, repetitive experiences of position exchange, like that between *hider* and *seeker*, enable children to have experiences that are more or less similar. By imaginatively recalling and anticipating social interactions that they have engaged and experienced, children are able to coordinate in more complex ways with others, to sense and understand others' perspectives as similar to and different from their own, and eventually to require less direct interactional experience to understand more of what is going on around them (Gillespie 2012; Martin and Gillespie 2010; Martin 2012).

When taking the perspective of the other, the child never leaves the domain of her own experience but is able to integrate functionally similar experiences by imaginatively drawing from her personal history of occupying the positions and perspectives she has experienced, which are functionally similar to those of others with whom she has interacted. Understanding integration of perspectives in this way provides a theoretical framework for the emergence of intersubjectivity and the agency it affords. Although actors cannot take each other's perspectives directly, they can quite literally take each other's social positions and thus experience similar perspectives.

With the acquisition of language and the ability to imagine possibilities verbalized, even if not extant in more directly observable ways, the child experiences the social world intersubjectively and interactively (Tomasello 2019). In position exchange it is the movement of actors between social positions which weaves the integration of perspectives that is intersubjectivity. Intersubjectivity seeds agency by enabling children who have been interactive in particular situations to transcend:

their own immediate embeddedness and to either take the perspective of others upon themselves, thus mediating their own activity, or to identify with others and thus act on their behalf ... Although actors gain agency through social interaction, they

subsequently possess agency to the extent that they manage to extricate themselves from those same interactions. (Gillespie 2012, p. 45)

As children are able to coordinate and integrate their positionings (and the perspectives they contain) with those of others, they learn to act toward and understand themselves and others as intentional agents. With age and greater social experience, direct and vicarious, the perspectives and possibilities which children can coordinate, imagine, and employ purposefully to guide their actions increase dramatically and become increasingly abstracted. Children become able to reflect, even to critique, their own points of view and opinions, to theorize about others and their life experiences, and to engage in social comparison and assessment. They are able to imagine how things might be different from what they are and react to these and other imaginings as well as to what actually is present and occurring around them. Eventually, their personal history of social interactivity and the intersubjectivity it bequeaths enable increasingly sophisticated capabilities of imagination and interpretation that allow older children, adolescents, and adults to develop longer-term purposes for themselves and make plans to achieve them. As goal-oriented, imaginative, and reflective agents, they are able to develop their own identities and styles, even as they continue to harvest the social and psychological riches available through their coordinated interactivity and intersubjectivity with others. Through these social interactions and experiences, we emerge through childhood and adolescence as persons with distinctive identities, self-awareness, creative possibility, and rational and moral agency. As person agents we are able to exercise some degree of self-determination, even if we do not always think or choose to do so and even as we continue to be shaped and influenced by the words and actions of others and the world around us.

Position Exchange and Creativity

Persons are uniquely creative beings. We are able to exercise our perspective taking and agentive capabilities in ways that help to determine our

own lives and life projects. Moreover, our interactivity and intersubjectivity with others allow us to coordinate and integrate perspectives and possibilities in the exercise of interpersonal, communal agency. Communal agency is a uniquely human achievement that has rapidly changed us and the world we live in. It gives us the power to create societies, cultures, and ways of life that, in the words of Michael Tomasello (2019) “ratchet up” the means and speed of evolutionary change. Our dynamically interactive and coordinated positioning within our sociocultural contexts has helped to transform our human ontogeny. We are able to operate not only as individual agents but also coordinate our activities with others and act as collective agents. We have developed practices of teaching and learning that are unique to human development. These coordinating practices enable forms “of cooperation with almost total interdependence among individuals” (Tomasello 2019, p. 342). Although many other evolutionary and developmental mechanisms and processes are involved in cooperative human action, position exchange makes important contributions to perspective taking, coordination, and integration as enablers of both our individual and collective agency.

Because the perspective taking and integration that arise from position exchange open up a divergence of possibilities for individual and collective consideration and action, PET is closely linked to human creativity. PET helps to explain how perspective taking develops during human ontogenesis as a consequence of the positions we occupy, take up, and imagine within the physical, material, sociocultural, and psychological space and time of our life experiences and projects. It seems obvious that detailed studies of the life contexts and positioning of creative persons might further our understanding of human creativity.

Life positioning analysis (LPA) is a social psychological and biographical method (Martin 2013, 2016a, 2019) that applies position exchange theory to examine life-long patterns of positioning that typify the lives and life accomplishments of creative people in psychology (Martin 2016b, 2017), athletics (Martin 2013, 2016c), and other walks of life.

LPA (Martin 2013) studies individual lives by examining their interactions and relationships with *particular others* embedded within what Mead (1934) called *generalized others*. Particular others are influential people in the life of a person. Generalized others are salient aspects of the broader social and cultural contexts within which interactions between the person and others occur. LPA consists of an interpretive, recursive examination of importantly influential relationships between particular and general others throughout the life of a person. First, the person’s life narrative is chronologically plotted and searched for patterns of interactivity and position exchange with particular others, especially those that seem to be repeated across different phases of the person’s life. The meaning and significance of these patterns of interactivity then are interpreted through a parsing of the sociocultural conventions, contexts, and traditions within which they occurred. Finally the interactive, interpersonal patterns and themes that emerge are considered in relation to the existential dimensions that run through the person’s life as a whole. Such consideration links patterns and contexts of position exchange and life positioning to the works and projects to which the agentive capabilities and creative urges of the individual have been devoted. These are the activities and creations that have given meaning and significance to the life of the person and stand as the person’s legacy.

Although LPA initially was developed to study individual lives, Martin also has used it to compare and contrast the life positioning and creative projects of pairs of individuals who share related life contexts and interests. Two of these dual biographical studies have examined the lives and works of psychologists: Stanley Milgram’s and Ernest Becker’s lives as related to their very different theories of evil (Martin 2016b) and Carl Rogers’ and B. F. Skinner’s lives as related to their theories of human freedom and control (Martin 2017). In both studies, Martin linked prototypic and often repeated interpersonal interactions and social position exchanges experienced by each of these individuals to the theoretical frameworks and methodological practices they employed in their psychological inquiries and theories.

For example, Rogers' early life interactions within his family displayed a social imbalance that positioned him primarily in the role of listener as opposed to the role of speaker. This imbalance was apparent in his interactions with his parents and older siblings and was sustained by the family's religious convictions that included the ideal "generalized other" of the good, obedient child leading a life of piety that manifests in submission to others and a higher power. This imbalance resulted in a preferred social demeanor in which young Carl kept his feelings to himself and tended to his own upsets and joys while carefully observing and actively listening to others. This characteristic positioning and social posture are readily evident in Rogers' nondirective approach to psychotherapy. However, later in life when he moved to California and became involved in the encounter group movement, he eventually was able to move more easily between positions of active listening to others and genuine expression of his own feelings and experiences. This personal change was intertwined with his mature work in developing person-centered therapy.

In contrast, the position exchange most central to Skinner's personal development and later career was a shift from being controlled by others and his social context to gaining control over his social life by arranging conditions supportive of such a shift. These often involved designing and building devices to aid the desired change. In one such instance, he avoided his mother's disapproval for failing to hang up his pajamas by installing a system of pulleys and written reminders, which was mechanically operated by the opening and closing of his bedroom door. Later in his life and professional career, Skinner was to design several devices and systems, from his laboratory "operant conditioning chambers" to his literary blueprint for a utopian community, to support his experiments and projects.

In such examples, it is possible to glimpse the important roles played by incomplete and reciprocal patterns of position exchange in the lives and creative accomplishments of two of America's most famous psychologists, whose life work also

reflected major themes of freedom and control in American life more generally.

Position Exchange, Imagination, and Possibility

Possibility entails seeing paths of action that, despite starting in the immediate environment, extend far beyond it towards possible futures that are entirely semiotic creations. Instead of being "trapped in the perceptual field" (Köhler 1925), humans live in a temporally and spatially extended environment; the past and possible futures are key aspects of our environment. Possibility lies in the gap between what is immediately perceivable and what is semiotically imaginable as a potential future. But where do these alternative, and semiotically imagined, futures come from? Of course, the future, as it unfolds, will be different from the present, and nobody knows exactly what the future will be, but what is remarkable is the extent to which humans not only can conceive of possible futures but also envision their role in creating them.

Our intersubjective being, built up through experiences of position exchange, creates associations, or mappings, between self and other. And these associations allow possibility to arise through the other. When one sees the fashionable attire of a colleague, this creates the possibility of a more fashionable future self. When one is young and sees the success of those who are older, this can create possible futures for oneself. When one sees the home of a colleague in a foreign country, one can entertain, in imagination, the possibility of relocating. Thus, our possible futures are all around us; they are visible in the actions, achievements, and predicaments of others (Gillespie 2007). But, to unlock these possibilities, to be able to play with them in one's mind, requires an imaginal exchange of position; and imagined positions, we have argued, are grounded in more elementary social, material, and institutional exchanges of position.

To illustrate how geographic re-positioning opens up possibility, consider the analysis of an English woman's diary from World War II

(Gillespie et al. 2007; Zittoun and Gillespie 2015b). The diarist, June, was 18 years old in 1939 and living at home with her sister in rural England. Her diary ends in 1945, shortly after the end of the war. When the government called for women to contribute to the war effort, she displayed the perspective of her community. For example, she describes the women who volunteer for war work as “man-chasing” and “the sort of girl that goes in is what I consider rather brainless.” Already, here, we see possibility being created by a self-other mapping; will she become like them? June chooses to contribute by leaving home and working on a farm producing food for soldiers. In this new community, with access to many enthusiastic male soldiers, her behavior begins to change. By 1942, after multiple dates and love affairs, she decries: “I don’t know what is becoming of me.” She has become “that sort of girl,” and thus there is a clash between her prior views and her current behavior. But the new situation, and her new position as desired, begins to change her perspective: “Oh well, I shan’t be young forever.” This break with her past creates new possibilities for her as the war comes to an end. She could, as her mother expected, return home. Or, she could, as her boyfriend expected, get married and settle down. Or, she could, as she herself desires, live and work as an independent woman enjoying the freedoms of being young. Amid the proliferation of options she writes: “This last month I have not known what to do to decide my future. I am constantly changing my mind.”

What the diary shows is that the geographic and social repositioning of June, out of her home community and into the community of war workers, not only creates new opportunities (e.g., meeting soldiers), but it changes her. First, she gets drawn into a network of boyfriends, then her behavior comes into conflict with the values of her home community, and finally she breaks from those values and chooses to live as a single independent woman. The growth of possibility, revealed in June’s diary, is inextricably bound up with her geographic and social repositioning. Before June psychologically “stepped out” of the perspective of her home community, becoming

committed to alternative life projects, she physically moved out of her home community. This shows the close connection between moving between positions in the social world and moving between perspectives in the psychological domain.

Possibility, from the standpoint of position exchange theory, begins with movement in the geographic and social world. Such movements simultaneously manifest and create possibility. They manifest possibility because they are future-creating. They create possibility because the change entailed, when layered upon previous experiences, opens up a semiotic space for imagining alternatives.

At the heart of position exchange theory is the fostering of reversibility. Things can be like this or that, life can be like it is here or like it is there, and here could become like there. The “I” and the “you” become reversible: seeing the success of the other creates the possibility for self, just like seeing the predicament of the other creates fear for self. For June, initially “that sort of girl” is a possible self. Towards the end of the war, it is the sight of married women who become June’s possible selves. This reversibility, we have argued, has its roots in the elementary reversibility of roles, beginning with physical tactile exchange and working up in complexity, through children alternating roles within games towards adults moving position within more complex institutions. The resultant reversibility means that we do not need to imagine ourselves out of the present and create possibility afresh, *de novo*. Instead, this reversibility means that other people, their actions, lives, and circumstances set the horizon of our own possibility.

Conclusion

Since its first formulations appeared in 2005, position exchange theory has been incorporated into several social psychological theories of perspective taking, agency, and creativity (e.g., Glăveanu 2015, 2018; Hanson 2015; Martin et al. 2010; Wagoner et al. 2015). Experiments (Gillespie and Richardson 2011), field studies (Frank and Ilieva 2015), and applications (Muñoz et al. 2019) have begun to appear that

support its basic tenets. By proposing a viable social psychological mechanism that operates at the level of person-to-person interaction within everyday life experience, position exchange theory contributes to a view of persons as active communal agents within their lives with others. As interactive agents, persons are capable of transcending their immediate circumstances and envisioning novel ways of approaching their individual and collective lives—lives that are fueled by the ever present possibility of transformation through the exercise of uniquely human forms of perspective taking, agency, imagination, and creativity.

Cross-References

- Collaborative Creativity
- Creative Development
- Creativity
- Emergence
- Imagination
- Participation
- Perspective
- Perspective-Taking
- Positioning Theory
- Possible in Psychology
- Potential

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- collaborators. Positioning Theory stresses that understanding what people do and what they don't do requires to look at what is permissible to do according to the local moral order that is followed and to the positions that people take in that order. "Positions" are clusters of beliefs that people have with respect to the rights and duties to act in certain ways. "Positioning" refers to the processes of assigning, appropriating, or rejecting positions. Every position both opens and closes possible actions. What people possibly can do is a function of three determinants: the **capacities** of people to do certain things, the **restrictions** imposed upon people to do certain things, and the **intentions** that people have to do certain things. One of the basic functions of society is to both stimulate and contain the possibilities of human agency. The study of the possible thus deals with the understanding of how a category of what might be possible in any given context has the chance of succeeding, yet might be denied due to a range of impermissible positions.

Keywords

Positioning · Capacities · Moral orders · Psychology

This chapter unfolds in three steps. First, the difficulties of psychology to cope with the study of human possibilities will be discussed. Secondly, it will be argued that in order to give possibilities a place in psychology, a triple perspective needs to be adopted: study what people possibly *can do*, what they are *allowed to do*, and what they *actually do*. Thirdly, Positioning Theory will be introduced as a tool to understand how people's space for acting is created.

Positioning Theory

Luk Van Langenhove
Vrije Universiteit Brussels, Brussels, Belgium

Abstract

In general, psychology does not pay a lot of attention to the realm of what people can possibly do as the focus is on explaining what people actually do. A notable exception to this is Positioning Theory, a perspective on psychology developed by Rom Harré and

The Challenges Facing Psychology When Exploring the Possible

People have at every moment of the day the possibility to do different things. When somebody is asked why (s)he is doing something rather than

something else, that person can answer: “I’m doing this because I choose to do so.” This implies invoking **personal agency** that does not need to be accounted for. Another possible answer could be that one did something because someone else asked to do it. Here, an **external factor** is referred to in order to account for the act. A special case is when a person ‘obliges’ him or herself to do a certain thing. In which case the “possible” again refers to personal agency, but now with an accounting that involves an **internal factor** or moral perspective, such as for instance, that with will-power everything is possible, and one can do certain things if one really wants. The three above mentioned accounts of behavior (agency and internal or external justification) illustrate that there is a place for the scientific study of the possible by focusing upon explanations why people may act in certain ways. One would expect that psychology takes this up, but this seems hardly to be the case for reasons related to the foundations of psychological research.

The science of psychology is divided into two different paradigms: one that emphasizes the quest for finding the causes of behavior and another that stresses the understanding of the meaning of behavior. These opposing paradigms come under different names, for instance positivism versus hermeneutics, quantitative or qualitative approaches or objectivism versus subjectivism. They are often related to differences in epistemology and methodology as reflected in the distinction between idiographic and nomothetic research (Van Langenhove 1995). In a groundbreaking book, the *Explanation of Social Behaviour*, Harré and Secord (1974) have labeled these perspectives, respectively, the Old and the New Paradigm. Today, the so-called Old Paradigm is still the mainstream, but the New Paradigm is becoming firmly established too. Below, both paradigms will be briefly presented and their implications for the study of the possible discussed.

Causalities and Predictions: The “Scientism” View

The natural world as we experience it is to a large extent deterministic. This has consequences for

the scientific study of natural phenomena. Take for instance the observation that apples fall from trees. As Newton discovered, this happens as result of gravity and the formula $F = G \frac{m_1 m_2}{r^2}$ applies, where F is the force of attraction between the two bodies, G is the universal gravitational constant, m_1 is the mass of the first object, m_2 is the mass of the second object, and r is the distance between the centers of each object. A similar example is hitting a billiard ball with a cue. As a result, the billiard ball then follows a pre-determined path on the billiard table. The play of forces and the law of inertia allow to predict the exact trajectory that the ball will follow. The same sort of calculations make that it is also perfectly possible to predict where in Brussels on 23 January 2134 at 14.23 GMT, the moon will be visible in the sky. All of this is possible due to a causal link between a chain of events where nothing much is possible except that the Humean¹ laws of causality are followed.

The fact that today the concept of causality is known to humanity, is related to the emergence of the “scientific method” characterized by the use of measurements and of experimental methods where conditions are created to test theories. Obviously, there is an incredible merit in the use of such a “scientific method.” But a problem arises when one assumes that those methods can also be transposed to the study of the social and psychological realm. This assumption is called “scientism” and is a dominant approach on the Old Paradigm (Harré and Secord 1974).

Because of causality, the possibilities of things that can happen remain limited in the natural world, for example, if you are holding an apple and then lose the grip on it, there is only one thing possible: the apple will fall until it reaches another surface. The apple is attracted to the earth as a result of gravity. This causality stands in stark contrast with what happens in the social world, where intentions and agency are crucial to understanding what is going on.

¹It was Hume who first described the nature of such causality.

Meaning and the Discursive Nature of the Social Realm

Indeed, the social world seems to be more open and unpredictable than the natural world. Going back to the example of the position of the moon on that day in the year 2134, there is, for instance, no way to know something about what will happen in the streets of Brussels on that same day. There simply is no causal chain between things that are happening in today's Brussels and what will happen then. The possibilities are much bigger. Although there is no social scientist that will claim to be able to predict what will happen in the year 2134, there is a strong current in social sciences to look for Humean causalities in shorter timespans. Predicting the outcome of the next elections for instance is seen as a doable task for psychologists. Traditionally, the dependent variable will be related to a set of independent variables as any basic textbook will explain. All this is based upon a scientist positivist interpretation of what counts as good research.

But it can be argued that a different approach to the study of the social and the psychological realm is feasible, one that leaves room for a range of possibilities, not only for the causal determinants of what we do. This alternative approach focusses on giving meaning to the world, in particular, the importance of the discursive nature of psychological and social phenomena. For instance, certain pieces of paper are considered to be money that can be used in economic transactions. This is because the Governor of the Central Bank has symbolically put his signature on for instance a twenty Euro note, signifying that that piece of paper has that value and that can be exchanged for goods. There is no causality in this process, only meaning. Children for instance who do not understand the concept of money yet, might happily tear the note to pieces. Behind the reality of money lays the principle of what Searle (2009) called the "declaration". In this example, a piece of paper is regarded to be worth twenty euros if someone with the authority to do so, has declared so. The social world therefore can be regarded as a discursive reality that operates by rules and conventions that are not causally directed.

Bringing the Possible into Psychology

The Old Paradigm in psychology has focused on the behavior of individual people, extending this to people in groups and, subsequently, attempts to establish causal links between behavior and external factors, such as the environment or genetic characteristics. To that has been added cognitive explanations that link behavior to internal cognitive schemes, some of which people are conscious of, others apparently not. Besides these restrictions of positivism, this perspective also implies a lack of the significance of any normative and/or moral conceptions rooted within social realities.

It is to the credit of Harré (2012) to have who pointed out that there is more to psychology than to study behavior and that the discipline might be complemented by on the one hand, the study of the capacities of people to do things and on the other hand, of the restrictions imposed upon them to not to do things (for an overview of the work of Harré, see: Van Langenhove 2011). Following Harré, we can now distinguish between three realms for the development of psychology as a discipline: the study of what people can *possibly* do, what is *permissible* to do, and what people *actually* do. As noted by Harré (2015): "what we can do is broader than what we may or may not do, which is broader than what we actually do." In other words, "may" is a tighter concept than "can" in the realm of human action (Harré 2012, p. 1). Below, the realms of capacities and permissible are discussed from a perspective that embraces the possible.

The Capacities of People to Act

What people actually can do is related to the capacities they have at their disposal. One can, for instance, only play the piano when one has learned to play piano, including reading sheet music and so capacities are related to tasks and tools. Everyday life can be regarded as a continuous series of tasks that need to be fulfilled. Brushing our teeth, sorting out taxes, writing a chapter for a book, painting the house, going jogging, visiting one's parents; they are all based on both practical and cognitive tasks.

Metaphorically, people can be said to have access to a set of tools that they can put to use for performing such tasks. The totality of such tools can be regarded as what people can possibly do.

Mapping the tools people have to perform tasks has to start with bringing in an evolutionary perspective that helps to understand why human behavior is so fundamentally different from animal behavior. That perspective reflects that the evolution of using tools dramatically expanded the range of what is possible. The human species is now capable of (i) using the human body as a tool, (ii) fabricating mechanical tools, and (iii) mobilizing other people as tools. Together this has consequences for how and what to study from a psychological perspective.

As biological beings, people are gifted with different bodily functions that open the way to doing so much more than any other biological creature. The main tools for this are our hands and our brains. The reasons why human beings are doing so well in terms of capacities to act, can to a large extent be related to the Darwinian evolution process that led to the growth of the human brain. But there is more to it: parallel with the development of the brain occurred a loss of specialization of certain parts of the body, notably the hands. On top of it, as the sapiens begun to walk on two legs, the hands became free to be used. First, there is the remarkable result of evolution, that our hands have developed in such a way that they can manipulate material things (tools) in an unprecedented way. This specialization towards unspecialized use of the hand, combined with the plasticity of the brain accounts for the evolutionary adaptation to diverse environments. That same brain also allows the use of language as a communication tool. The resulting development of language led not only in the possibility of sharing ideas with others but also in the development of a further second tool: the imagination of things and the thinking about new possible things.

Second, this human development brought with it the capability to fabricate mechanical external (material) tools. The combined use of the brain and the hands allowed to fabricate tools such as hammers, recipients to store food, weapons, and so on. But the factor that really differentiates the

human species from the animal world is that at the same time, human beings became organized in complex societies where collaboration and division of labor resulted in a dramatic increase of what did and can become possible. In the long process that led to a world full of tools, something important happened; human beings started to collaborate in producing tools and a division of labor emerged. Some people developed skills to produce certain tools which could be traded with other goods. That created a complex social environment that makes that every person in a society can profit from the endeavors and specializations of many other persons. As a result, people live in a sea of possibilities that overpasses their individual capacities.

Third, the common viewpoint on human capacities is that people have remarkable powerful brains that allow language, advanced motor skills, and creative thinking to develop. This is, however, only part of the picture. Perhaps the biggest way to create possibilities is to use the brains of other people. As such, not only are the cognitive capacities of individual people the main reason why we are so good at collaborations (be them forced or on a free basis), but what can be called using the extended brain of other people. So, if we want to fully understand what people do and can do, one has to realize that the capacities of people are not confined to their own brain. The capacity of people is as much the result of their being related to literally thousands of other brains. In other words, the possibilities of people to act depends on many others people.

It may look like a “normal” aspect of modern life, that we can hop on a plane to deliver a lecture at the antipodes and meanwhile prepare the PPT while enjoying a glass of wine and listening to Spotify. But none of this would be possible if we didn’t have a system that makes it possible that somehow thousands of people have spent their time mobilizing their skills to produce all these artifacts. The person on a flight in this example doesn’t need to know how an Airbus 380 is manufactured, nor how to fly it. But (s)he needs to know other things, for instance, how to check in to the relevant airline desk, what to include/not include in their packing, how to navigate

passenger terminals, etc. Most of all, (s)he needs to have trust in others that they will be safe and arrive at their chosen destination using technology developed by unknown others.

The Normative Restrictions to Act Seen from the Positioning Theory Angle

People can achieve a lot because they have the unique power to use tools and mobilize people in an unprecedented way. But it is not because one masters the skills to play a piano, that one can use those skills at any time everywhere. As Harré (2011) puts it: “the scope of what people actually do is very much narrower than what they can do.” This seems to be a neglected aspect of the psychological study of behavior, for sure in the Old Paradigm, but also in a lot of New Paradigm research. One way to overcome this is to examine the beliefs that people have about rights and duties to act in certain ways. Between the domain of what is possible and the domain of what actually happens, lays according to Harré (2011), the domain of the permissible and the impermissible. For Harré, it is in the latter perspective that Positioning Theory has its place, as it tackles the question of what the processes are by which the domain of the permissible is extracted from the domain of the possible.

The origins of Positioning Theory go back to two foundational texts published in the *Journal for the Theory of Social Behaviour* (Davies and Harré 1990; Harré and Van Langenhove 1991) and to an edited volume that appeared in 1999 (Harré and Van Langenhove 1999). Positioning Theory is defined as “an explanatory scheme to understand and study discourse and its relation to different psychic and social phenomena” (Harré and Van Langenhove 1999, p. 2). Furthermore, it is claimed that “a powerful use of positioning theory as an analytical tool is that not only persons and their identities both individual and social, but also societal issues on a cultural level can be tackled with the same conceptual apparatus” (ibid., p. 12). And finally, the authors introduce the following metaphor to explain the power of the theory: if the species-wide and history-long

conversation between people can be regarded as a labyrinth network, then “positioning theory offers a possibility to shift from the perspective of maze traders, those who are within the labyrinth, to a perspective of maze viewers, those who can see the labyrinth form above” (ibid., p. 13). A central aspect of Positioning Theory is that it stresses that understanding what people do and what they don’t do requires to look at what is permissible to do according to the local moral order that is followed and to the positions that people take in that order. Thus “Positions” can be described as clusters of beliefs that people have with respect to the rights and duties to act in certain ways. “Positioning” refers to the processes of assigning, appropriating, or rejecting positions. Every position both opens and closes possible actions.

But positions have to be related to two other perspectives: the storylines that develop within interactions and the speech-acts that are uttered by the persons. Positioning Theory claims that every social situation can be understood by analyzing the mutual determinable triangle of positions, storylines, and speech-acts. What people possibly can do is a function of three determinants: the **capacities** of people to do certain things, the **restrictions** imposed upon people to do certain things, and the **intentions** that people have to do certain things.

At any given moment people live their lives in a multitude of overlapping moral orders. Some of those moral orders are of a very general nature. Others can be very specific and active only in specific spaces and/or for limited timeslots only. In both cases (general or specific), moral orders can be latent or active. Latent moral orders are not “in use” in a certain episode. Van Langenhove (2017) has identified five different types of moral orders: general cultural orders, legal moral orders, institutional moral orders, conversational moral orders, and personal moral orders. Together, the above five varieties of moral orders constitute the invisible moral space in which human agency is deployed.

As noted by the social psychologist Bandura, to be an agent, is to “influence intentionally one’s own functioning and life circumstances” (Bandura 2006, p. 53). This captures well what

agency is. But combining the notion of agency with the above presented analysis allows us to be even more precise about what it is: it is the mobilization of capacities and abilities that one considers to be appropriate to be mobilized for the execution of forethought tasks.

Agency has to be contrasted to non-agency. In the latter, a person is not able to live up to a task. An often-neglected dimension of agency is mental ownership: the actor that sees his/her own mind as independent and acknowledging that (s)he is responsible for their acts. The highest form of creating new possibilities can be found in the realms of free will, that is the shaping of one's destiny by doing things that are permissible in the moral order of the day within its own particular context.

Conclusions

In sum: in order to understand why people are doing certain things out of the possible things they could be doing, one has to take into account:

- The totality of things a person can do in terms of skills and capacities as distributed over a collectivity of persons.
- The capacities of a single person to understand the social situation and deploy the tools and skills necessary to attend to and cope with it.
- The moral and normative aspects of the situation that restrict what is appropriate or permissible to do.

The luxury of possibilities is made possible by two connections between persons: the moral orders and the knowledge fields. The challenge is to understand the dynamics of transforming the possible into realities. What people can possibly do is a space of potentialities defined by the limitations of the personal capabilities and the restrictions imposed by a moral order. The agency of people lays in the possibilities to create new capacities, through training, and inventing, and the possibility to overrule any moral order with a belief that one has to do certain things. The possibilities to act are not limited to individual people. On the one hand,

the capacities to act are related to the mobilization of the extended brain. On the other hand, there are limitations to the possibilities imposed through certain moral orders.

Human beings have a wide range of possibilities to act before them. This should have been a main topic of concern to psychologists right from the emergence of the discipline. But under influence of the scientism model, the study of psychology became narrowed down to what can be observed as behavior. As such, the study of what people are able and allowed to do, almost totally disappeared from the ambitions of psychology. What is perhaps needed is a broader perspective on the actual behavior of people that gives room for possibilities as a subject of study. Positioning Theory can certainly illuminate this by mapping how moral orders operate as fields. In order to approach the issue of possibilities, psychology would do well to redirect its practice away from the positivist perspective. Positioning Theory offers a useful framework in order to understand why people might have at all times a range of possible behaviors before them that will be narrowed down, either substantially to one specific behavior or to a set of possible behaviors from where they can choose to act. This calls for a new type of scientific understanding that combines psychological factors with the sociological. At the end of the day, the challenge for any society is to manage a balance between stimulating and enabling facets of human agency while containing it at the same time.

Cross-References

- [Imagination](#)
- [Possible in Psychology](#)

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Positive Emotions

► Positive Psychology

Positive Psychology

Lukasz Dominik Kaczmarek
Department of Psychology and Cognitive
Science, Adam Mickiewicz University in Poznan,
Poznan, Poland

Abstract

Positive psychology is a field of psychology asking about the highest good in life (or “life worth living”) and effective ways of pursuing this good. Positive psychology has been focused on the theory and research on increasing happiness or well-being. Positive psychologists translate this knowledge into clinical and nonclinical

evidence-based practice, for example, in the form of positive psychological interventions. The term positive emphasizes the need to examine positive rather than neutral or negative states in human functioning and experience. The reason for positive focus is that it was a neglected scientific area compared to other fields, for example, psychopathology, a complementary field of relieving suffering or the worst in life. This entry presents positive psychology’s definitions and main contributions to the discipline. Moreover, it presents how positive psychology builds upon classical philosophy and earlier psychology, how it overlaps with similar scientific movements, and its limitations. The final section presents how positive psychology has come to grips with issues many authors thought impossible to address.

Keywords

Positive psychology · Happiness · Well-being · Satisfaction with life · Positive emotions · Interventions

Synonyms

Happiness; Well-being; Satisfaction with life; Flourishing; Positive emotions

Definitions

What is the best life possible? What is the highest good in life? When are individuals at their best? How to achieve these global desirable life aims? These are some questions that positive psychology asks. Table 1 presents a considerable variation in how authors have defined positive psychology – “a woolly field with diverse and conflicting views” (Duckworth et al. 2005). This limitation concerning the self-identity of positive psychology was primarily attributed to the youth of the discipline. Nevertheless, after more than two decades, the boundary between what is and is not positive psychology is still considered fuzzy. However, the available definitions of positive psychology bear a clear family resemblance (Fig. 1). Due to its long history and diversity in theoretical

Positive Psychology, Table 1 Positive psychology definitions

Authors/references	Definition/explanation
Diener (2003)	To study the factors that make life more fulfilling, meaningful, and enjoyable.
Duckworth et al. (2005)	The scientific study of positive experiences and positive individual traits and the institutions that facilitate their development.
Gable and Haidt (2005)	The study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions.
Linley et al. (2006)	Scientific study of optimal human functioning. At the meta-psychological level, it aims to redress the imbalance in psychological research and practice by calling attention to the positive aspects of human functioning and experience, and integrating them with our understanding of the negative aspects of human functioning and experience. At the pragmatic level, it is about understanding the wellsprings, processes, and mechanisms that lead to desirable outcomes.
Park et al. (2004)	An umbrella term for the theory and research on what makes life worth living.
Peterson (2006)	The scientific study of what goes right in life, from birth to death, and at all stops in between. [...] An approach within psychology that takes seriously as a subject matter of those things that make life most worth living.
Peterson (2008)	Positive psychology is the “scientific” study of what makes life most worth living. It is a call for psychological science and practice to be as concerned with strength as with weakness; as interested in building the best things in life as in repairing the worst; and as concerned with making the lives of normal people fulfilling as with healing pathology.
Seligman and Csikszentmihalyi (2000)	The scientific study of positive human functioning and flourishing on multiple levels

(continued)

Positive Psychology, Table 1 (continued)

Authors/references	Definition/explanation
	that include the biological, personal, relational, institutional, cultural, and global dimensions of life.
Sheldon and King (2001)	The scientific study of ordinary strengths and virtues [...] with interest in finding out what works, what is right, and what is improving.
Sheldon (2009)	It is a conceptual movement in both the research and applied arms of the psychological community which seeks to rectify the “negative” biases of traditional psychology so that a full accounting of human nature and behavior can emerge.
Sheldon and Ryan (2011)	Understanding what goes right, how adaptive systems function, and why the average person does well, such that most people live lives of integrity and contentment.
The Journal of Positive Psychology	Scientifically informed perspectives on what makes life worth living. It focuses on aspects of the human condition that lead to happiness, fulfillment, and flourishing.
Wikipedia, Community definition	The scientific study of what makes life most worth living, focusing on both individual and societal well-being.

Note. Some authors provided more than one definition as definitions changed depending on context and time

approaches, positive psychology can be considered an integrative “umbrella term” for the theory and research on making life worth living (Park et al. 2004).

First, positive psychology aims to identify and understand the most desirable definite outcomes in life, that is, ultimate goals or life fulfillments worth pursuing for their own sake (e.g., happiness, flourishing, or positive emotions). Second, positive psychology aims to identify and regulate processes (wellsprings) that facilitate these positive outcomes, possibly in the most effective way. Positive psychology usually focuses on positive experiences, positive individual characteristics, and the factors that foster their development.

(healthy mindedness), Gordon Allport (positive human characteristics), Lewis Terman (giftedness and marital happiness), James Watson (effective parenting), Carl Jung (meaning in life), Abraham Maslow and Carl Rogers (humanistic psychology), or Maria Jahoda (ideal mental health) (Gable and Haidt 2005; Seligman and Csikszentmihalyi 2000). Of particular note, around the time Seligman delivered his presidential keynote about positive psychology, Carol Ryff and Burton Singer (1998) promoted the need to study positive human health and flourishing by capitalizing on the philosophical accounts of the good life. Thus, positive psychology at its origins aimed at uniting and invigorating scattered and disparate lines of theory and research to provide a basis for further systematic scientific development (Seligman et al. 2005). Until the foundation of positive psychology, psychological research on positive aspects of life never managed to gain a high enough status to become a prominent field of research and practice.

Positive Psychology as a Scientific Movement

Positive psychology is rooted in dissatisfaction with the state of psychological knowledge at the turn of the twentieth and twenty-first centuries. At that time, psychology focused on the worst in life, for example, human weaknesses, and developed scientifically valid psychological help methods in remedying individual and social problems (Seligman and Csikszentmihalyi 2000). Seligman himself was a recognized author in psychopathology (e.g., learned helplessness). Some authors falsely believe that positive psychology aims to substitute or suppress other areas of psychological research, for example, assuming that what is not positive psychology is considered “negative psychology.” In contrast, most authors emphasize that positive psychology aims to provide new information that complements the psychological account of problematic or sub-optimal human functioning (Gable and Haidt 2005).

Thus, positive psychology might be perceived and defined from a meta-psychological perspective,

that is, as an intellectual force external to the whole body of psychology that aims to reshape psychology (Linley et al. 2006). This involves extending the scope of the investigation, reassigning priorities, restoring the scientific gravity of specific subjects, or introducing more scientific rigor into subjects often examined superficially, speculatively, or taken as granted. The aim was to facilitate evolution towards a more comprehensive discipline of psychology, equally respecting every form of human experience.

A complete science and practice of psychology require an understanding of both suffering and happiness and their interactions, and the development of proven interventions that relieve suffering and enhance happiness. (Seligman et al. 2005, p. 410)

Consequently, positive psychology regarded from this meta-perspective was expected to become redundant once psychology accepts as standard, the study of the positive in life.

My hope is that positive psychology is a movement that will eventually disappear because it becomes part of the very fabric of psychology. [...] There will remain many psychologists who study the problems that afflict us; there will also be a large cadre of psychologists who study the factors that make life more fulfilling, meaningful, and enjoyable. (Diener, 2003, p. 120)

Terminology

Positive Positive psychology dedicated little attention to defining what it means that something is “positive.” Some authors proposed that the primary aim of positive psychology might be to define what is “positive” (Diener 2003). Ed Diener equals “positive” with “good” or “valuable.” For instance, people's choices reflect positive, that is, if individuals consistently choose something, they must consider it positive. Second, people's judgments and experiences reflect positive, that is, something is positive if people are satisfied or pleased with it. Third, value systems based on normative thinking reflect what should be considered positive, for example, positive behavior is based on kindness or gratitude rather than selfishness.

Happiness Primarily, positive psychology used the concept of happiness (and happiness interventions) more often than presently (Seligman et al. 2005). Happiness was mostly abandoned for the sake of other similar concepts, for example, flourishing, thriving, satisfaction, or well-being. This might be partially explained by the fact that happiness is a term that has absorbed ambiguities collected over centuries as it has been extensively used in various contexts for millennia in the everyday language and across different scientific disciplines (Tatarkiewicz 1976). Consequently, happiness might be considered too unwieldy for a scientific term. For instance, some authors in positive psychology use happiness as a synonym for well-being. Some consider happiness as a broader concept than well-being, and some consider happiness as a well-being ingredient.

Character Strengths and Virtues Much positive psychological theory, research, and practice have been dedicated to virtues and character strengths (Peterson and Seligman 2004). Character is the moral aspect of a person leading to actions that improve one's own life and the lives of others. Unlike talent, character strengths depend mainly on motivational factors, that is, in most cases, it is sufficient for a person to endorse a specific intention to succeed in acting on their character strengths (e.g., being kind to others). Positive psychologists developed a list of 24 character strengths reviewing moral traditions in Buddhism, Christianity, Greek philosophy, Hinduism, Islam, Judaism, Confucianism, and Taoism. These strengths were grouped into six overarching virtues: courage, justice, humanity, temperance, wisdom, and spirituality (Peterson and Seligman 2004). Wisdom and knowledge, for example, manifests as creativity, curiosity, open-mindedness, a love of learning, or the ability to take different perspectives. Moderation manifests as forgiveness and mercy, modesty, prudence, careful choice, and self-control. Character strengths and virtues are an essential part of positive psychology because the intentional use of character strengths leads to increased well-being (Koydemir et al. 2021). The work on character strengths presents the most detailed and explicit

account of the eudaimonic perspective within positive psychology.

Clinical Positive Psychology

Despite the main interest in the upper pole of the well-being dimension (e.g., flourishing), positive psychology is also concerned with clinical perspectives (Duckworth et al. 2005). This assumes that even individuals struggling with severe psychological problems are motivated to build their strengths, life satisfaction, and meaning, not just correct their weaknesses. These positive outcomes do not come automatically when suffering is removed. Corey L. M. Keyes' (2005) Complete State Model of Health presents a positive clinical perspective. This model locates individuals across two orthogonal dimensions: presence vs. absence of mental disorders and presence (flourishing) vs. absence (languishing) of well-being. Consequently, some individuals languish despite the absence of mental disorders, and some individuals flourish despite the burden of mental disorders.

Overlap of Positive Psychology with Other Psychological Movements

Hedonic Psychology Several areas of study overlap but do not explicitly integrate with positive psychology. Positive psychology is similar to hedonic psychology (Kahneman et al. 1999). Hedonic psychology is a movement that has received less interest than positive psychology despite some conceptual similarities, for example, hedonic pursuits. Hedonic psychology aims to study "what makes the experience and life pleasant or painful" (Kahneman et al. 1999, p. x). Thus, hedonic psychology covers an aspect of human experience explicitly addressed in positive psychology (Seligman et al. 2005). However, positive psychology set sail to cover a broader range of positive outcomes, focusing on superior performance (the good life) and personal fulfillment (meaningful life). Several key contributors to positive psychology also contributed to hedonic

psychology. For example, Ed Diener, Barbara Fredrickson, and Christopher Peterson.

Health Psychology and Public Health Positive psychology shares concepts with health psychology and public health. This overlap holds if health is considered “complete physical, mental, and social well-being and not merely the absence of disease or infirmity,” as proposed by the World Health Organization (WHO 1946/2006). According to this approach, the study of health must not be reduced to the study of the body. It ought to reach psychological and social aspects. Moreover, health must not be reduced to avoiding adversity. It should be conceptualized positively as reaching the “highest possible level of health” (WHO 2006). The World Health Organization constitution explicitly presents happiness as an overarching value and the ultimate aim for applied science. As with positive psychology, health psychologists seek to develop high-quality interventions that promote health by increasing physical, psychological, and social well-being. Despite its focus on positive aims, positive psychology further increases the overlap with health psychology and clinical psychology by targeting well-being among individuals with severe mental disorders (Geerling et al. 2020) and physical problems (Lai et al. 2019).

Salutogenesis Some positive psychology principles bear a resemblance to the theory of salutogenesis (origins of health) that seeks positive aspects of human experience (Antonovsky 1979). A key concept for salutogenesis is the sense of coherence reflected in understanding and managing the world, maintaining realistic optimism, and leading a meaningful life. As is the case with positive psychology, salutogenesis positions itself as complementary to pathogenesis advocating for the need for psychology to cover the whole spectrum of human functioning along the negative-positive dimension.

Education and School Psychology There are similarities between the fields of interest in positive psychology and education or school psychology (Froh et al. 2011). Education scientists

studied many concepts central to positive psychology over decades, nurturing the best in students and individuals across the lifespan. A bibliographic analysis of the topics addressed by journals devoted to educational psychology revealed that over the past 50 years, the proportion of papers focused on positive psychological concepts has ranged from 25% to 33% (Froh et al. 2011). These contributions covered concepts such as achievements and competencies more often than concepts more central to positive psychology, such as positive emotions, meaning, or satisfaction.

Positive Psychotherapy Despite the similar name, positive psychology and its intervention techniques have little in common with positive psychotherapy developed by Nossrat Peseschkian in 1968 within psychiatry. This is important because positive psychology has also used the term positive psychotherapy to address therapeutic programs for clinical groups based on positive psychological interventions.

Positive Psychology Interventions

Positive psychological interventions are activities that promote positive emotions, beliefs, and behaviors to increase well-being. Multiple interventions offered in various settings have been developed to engage psychological processes such as gratitude or kindness. Several intervention outcomes have been studied, for example, satisfaction with life, positive emotions, engagement, meaning, eudaimonic well-being, or prosocial behaviors. Positive psychology offers validated brief interventions and complex psychological support programs using sequences of positive interventions.

As of 2021, the literature has offered 68 randomized controlled trials of positive psychological interventions with 16,085 participants (Koydemir et al. 2021). The results indicated that positive psychological interventions effectively produced long-term effects of moderate increases in subjective well-being and weak increases in eudaimonic well-being (Koydemir

et al. 2021). Seligman hopes that positive interventions might become positive psychology's most enduring contribution to the development of psychological practice (Seligman et al. 2005).

Positive Psychology Criticism

W.E.I.R.D-Centrism A bibliometric analysis of positive psychological interventions revealed that the majority (78.2%) of intervention research was based on recipients residing in Western countries and represented highly educated individuals with high income (W.E.I.R.D) (Hendriks et al. 2019). Consequently, there is some cultural mismatch in the literature. For instance, positive psychological interventions are less effective for Asians than non-Asians (Ng and Ong 2022). This reflects earlier observations that most psychology authors are affiliated with North American institutions (Thalmayer et al. 2021). Thus, their work is likely to implicitly address a specific worldview that might not recognize the needs of individuals living in other societies and cultures.

Context Positive psychology aims to examine what leads to enhanced well-being. Consequently, some readers might have the impression that the findings presented within the field of positive psychology generalize to all individuals in all circumstances (McNulty and Fincham 2012). However, a more accurate perspective might require an emphasis on contexts by asking under which conditions some traits and processes (e.g., forgiveness or gratitude) serve the well-being and under which conditions they do not influence or undermine well-being (Gruber et al. 2011). This contextual perspective points to the possibility that experiencing and expressing happiness (e.g., positive emotions) does not fit certain situations (e.g., in response to the misery of others). Happiness also can be experienced in a dysfunctional way (as is the case in mania). Finally, happiness can be inherently detrimental to an individual (satisfaction and pride derived despite the absence of sufficient merits) or social (e.g., bragging or presenting hubristic pride that diminishes the self-

worth in others) functioning. This contextual approach insists that psychologists avoid labeling traits, processes, and outcomes uniformly and ultimately positive.

Positive Psychology and the Possible

Is It Possible to Become Happier? Positive psychology as a field of study, to its very beginning, centered on the notion of what is possible and what is impossible within human well-being in general and in becoming happier in particular. Some initial arguments against the aims of positive psychology were that it is not possible to increase happiness intentionally because it is a stable trait. Genetic factors explained this stability (e.g., the high correlation of well-being among monozygotic twins) and general regulatory processes that prevent feeling extraordinary happiness by quickly adapting to favorable circumstances (i.e., hedonic adaptation). The vast literature regarding positive psychological interventions indicated that substantial increases in well-being are possible if individuals engage in intentional activities that promote well-being (Koydemir et al. 2021).

Is Positive Psychology Possible Within Psychology? The development of knowledge about happiness is not always plausible from a historical perspective. Happiness can be perceived "luxury state" that is morally problematic to pursue in the face of misery experienced by most others. Along similar lines, positive psychology might be considered a luxury field of science that deserves less attention, effort, and research resources than perspectives focused on resolving individual and social problems to relieve suffering and despair. Laypeople and decision-makers might expect psychology to explain the causes of phenomena related to violence, suffering, or inequalities before proceeding to the study of happiness. A particular manifestation of such tendencies was the focus of the post-war psychological research on the dark aspects of the human personality that led to mass genocide. Seligman and

Csikszentmihalyi (2000) argued that there were specific periods in history in which society's affluence has provided a foundation for pursuing psychological surplus, for example, developing the human potential to create extraordinarily beautiful (and usually unnecessary) achievements. Over two decades of positive psychology development and its continuous scientific momentum suggest that developing psychology's positive side is possible and feasible.

Summary

Positive psychology is the most recent attempt to revive the question about what is most meaningful in life and how individuals can achieve it effectively. Apart from a basic science perspective, positive psychology is focused on developing and testing interventions to achieve greater well-being. Positive psychology is also criticized for its neglect of non-W.E.I.R.D cultures and an out-of-context one-size-fits-all approach. Among the main achievements of positive psychology is documenting that becoming happier is possible via intentional activity, which can be perceived as a luxury by some individuals and in some social or historical contexts.

Cross-References

- [Awe](#)
- [Creativity](#)
- [Curiosity](#)
- [Emotional Intelligence](#)
- [Empathy](#)
- [Flow](#)
- [Hope](#)
- [Humor](#)
- [Mindfulness](#)
- [Novelty](#)
- [Open-Mindedness](#)
- [Openness to Experience](#)
- [Play](#)
- [Possible in Education](#)
- [Possible in Human Development](#)
- [Possible in Psychology](#)

- [Potential](#)
- [Social Change](#)
- [Spirituality](#)
- [Talent Development](#)
- [Values](#)
- [Wisdom](#)

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Possibility

Ryszard Praszkiere

Institute for Social Studies, Emeritus, University of Warsaw, Warszawa, Poland

Abstract

The aim of this entry was to analyze the way in which people perceive difficult challenges. A specific personality trait is proposed herein, reflecting the way individuals perceive challenges on a “doable” to “not doable” scale, named *possibility* (a blend between “possible” and “creativity”). Possibility is depicted as a cognitive property, balancing the perception of one’s own aptitudes with analysis of the characteristics of a challenge.

The theoretical background of possibility is presented herein, that is, the concept of transgression, Kurt Lewin’s balance of forces, and the majority/minority influence. Moreover, attempts to measure transgression are introduced.

Finally, a method for assessing possibility is presented, that is, a projective questionnaire, characterized by positive psychometric properties validated on a $N_0=1117$ sample.

As *possibility* matters in solving social problems, it is recommended to identify, in future research, methods of training, especially of future leaders and the younger generation, so as to augment their propensity for perceiving challenges as doable.

Keywords

Possibility · Transgression · Entrepreneurship · Innovations · Challenges · Doability · Self-efficacy

Introducing Possibility

Transgression

Exploring the impossible and overstepping one’s own personal limits have been disputed since the

twentieth century. Erich Fromm (1990) believed that for seeking a higher meaning, individuals try to overstep, as far as possible, the boundaries of chaos. Meanwhile, Abraham Maslow (2019) posited that while meeting one's self-realization needs, an individual may overstep their own psychological limits.

Exploring the impossible is pivotal for many fields, for example, for perceiving the philosophy of history as shaped by a passion for "the impossible" (Derrida 1991, 1995; Mason 2007) and for inventing a new path to the anthropological understanding of "impossible" cultures (Hauser 2009). It is also seen as a value in philosophy (Gutting 2013) and in cognitive sciences (Collins 2000).

Exceeding oneself has long been a focus of transgression studies (Barnhart 1988; Sokal 1996; Madsen 2014). In this vein, Józef Koźielecki coined the term "transgressionism," meaning the psychology of exceeding oneself (Koźielecki 1987, 2001). He identified four basic dimensions of transgressionism, namely, material (toward things), social (toward others), symbolic (toward symbols), and self (toward the self) (Koźielecki 1987; Szewczyk 2014), also mentioning some other dimensions, for example, historical, expansive, and creative (Koźielecki 2001). The focus of this entry is on the self and social spheres.

Disturbing the Balance Between Forces

Following Kurt Lewin's "balance between forces" theory, social and symbolic transgressions breach the status quo and therefore usually meet with resistance, as the system has a tendency to revert to its equilibrium. Lewin claimed that to achieve social change, one needs to destabilize the current equilibrium, establish a new equilibrium, and then stabilize this new equilibrium (Lewin et al. 1939; Lewin 2004). This is applied in practice, for instance, by business or social entrepreneurs, who are inspired to alter a dysfunctional equilibrium (Martin and Osberg 2007; Praszkiar and Nowak 2012).

Majority/Minority Influence

One of the factors protecting the old equilibrium is the majority influence. The famous Asch

experiment documented that even if individuals make obvious wrong choices, most of them tend to conform to the majority's false opinions (Asch 1956; McLeod 2008). A plausible mechanism is that if there are two basic psychological needs, that is, the need to be right and the need to be liked, the latter is often predominant and leads humans to conform to the expectations of others (Deutsch and Gerard 1955).

However, there are individuals who create a minority movement and, through this, influence the majority. They act as agents of social change by questioning established societal perceptions and proposing alternative ideas that challenge existing social norms (De Dreu and De Vries 2001; Gardikiotis 2011; McLeod 2018). In lieu of this, they become "bubbles of new in the sea of old" (Vallacher and Nowak 2007). Such people who act against the prevailing majority opinion and introduce new concepts are sometimes called "positive deviants" (Sternin 2002; Marsh et al. 2004; Elkington and Hartigan 2008).

Origins, Etymology, and Definition

Praszkiar (2019a) presented case studies of such individuals, including the resistance and critique they encountered during the early stage of the launch of their projects: Ricardo Semler, a Brazilian entrepreneur, achieved the "impossible," turning (in the 1970s) a struggling family business into a thriving company with a revenue in excess of \$200 million and creating a partnership-based no-managers management style, now in use across the globe. He faced harsh criticism from his family and the business environment, but clung to his vision of the workplace as a nimble and agile society of co-workers (Praszkiar 2019a, p. 9). Mary Gordon from Canada envisioned a school free from aggression and bullying and achieved this through bringing empathy to classrooms; she did so by inviting neighborhood families with babies for students to learn about and play and sing with. These ideas were initially met with resistance and doubt – a common response to innovation, especially within the school system (Praszkiar 2019a, p.19). Piotr Pawłowski from Poland, who, after an unfortunate dive, broke his spine and remained in a wheelchair with only one

finger moving, launched a national movement for mainstreaming disabled persons, also reshaping the city architecture, as well as computer hard- and software design, to enhance accessibility. In the early stage, skeptics weighed in: “You’re both in wheelchairs; aren’t you biting off more than you can chew?” (Praszkier 2019a, p. 25). Temple Grandin was born autistic and, at that time (mid-1940s), was diagnosed as a severely impaired and hopeless case. Against the opinions of her doctors, family, and friends, Temple Grandin’s mother supported her in pursuing education. She discovered a passion for cattle, and against the advice of experts and friends to postpone her dreams, she became a world-famous university professor and expert in handling cattle (Grandin 2006a), as well as in finding positive ways to turn autism into a benefit (Grandin 2006b).¹

People such as the aforementioned individuals explore the impossible and transgress their mind to the level of previously unthinkable ideas. They perceive as doable intractable challenges that have thus far been seen as unrealizable. Against the pressure of the majority, these individuals seem to have a specific property of the human mind that controls the level of conviction that challenges, even if insurmountable, are achievable (Praszkier 2019a, b).

Along these lines, one may assume that each individual has a tendency to evaluate challenges somewhere on the spectrum between two extremes, namely, “it is obviously undoable” and “it is obviously doable.” This evaluation is a cognitive process, stemming from the balance between perceiving one’s own capabilities and analyzing the features of a challenge.

The proposed name for this mind’s property is *possibility*, which is a blend of “possible” and “creativity” and echoes the pronunciation of “realizability” or “creativity” (Praszkier 2019a, b).

Possibility as an Internal–External Balance

As mentioned before, possibility is a cognitive process, based on balancing the perception of one’s own aptitudes with analysis of the characteristics of a challenge. A higher level of possibility leads to the process of transgression; in Kozielski’s language, transgression relates both to the self and the social environment (“toward others”). It seems important to review the mechanisms contributing to both.

Perception of Own Capabilities (Transgression of Own Self)

The perception of one’s own capabilities may contribute to the level of possibility; some examples are outlined below.

One’s own capabilities may be seen through the lenses of Albert Bandura’s **self-efficacy**, that is, belief in one’s own ability to succeed (Bandura 1977, 1982; Akhtar 2008). High self-efficacy facilitates the execution of sufficient effort, leading to successful outcomes; meanwhile, low self-efficacy is likely to terminate effort early and lead to failure (Stajkovic and Luthans 1998). However, overestimating personal abilities does not lead to better results (Stone 2002).

Julian Rotter’s concept of **locus of control**, that is, the degree to which people believe that they have control over the outcome of the events in their lives, indicates that an internal locus of control leads to the belief that the environment is responsive to one’s own personal actions, while an external locus of control indicates that the environment is seen as uncontrollable (Rotter 1966; Wang and Lv 2017).

Similarly, according to Carol Dweck’s concept, individuals may perceive other people and the world as unchangeable or, on the contrary, as malleable and **changeable** (Chiu et al. 1997; Dweck 2000, 2006). People who do not believe in this malleability typically think that things are set once and for all; research has documented that such people have a much

¹ <https://www.ashoka.org/en-PL/fellow/temple-grandin#intro>; accessed 17 July 2020.

higher tendency to stereotype others (Levy et al. 1998), and they are more inclined to avoid the risk of rejection. Conversely, those who believe in the malleability of the world tend to learn by failure instead of focusing on avoiding rejection (Dweck 2000).

Optimism reflects the extent to which people hold generalized favorable expectancies for their future and anticipate the best possible outcome. Higher levels of optimism have been prospectively related to better subjective well-being in times of adversity or difficulty (Carver et al. 2010). Moreover, optimistic people exert effort, whereas pessimistic people disengage from effort (Carver and Scheier 2014).

Need for Achievement (N-Ach) is an intense and lasting effort to accomplish something difficult, with the determination to win (Murray 1938; McClelland 1961). It may involve setting and accomplishing challenging goals, with a moderate tendency for risk-taking (McClelland 1961; Brockhaus 2017).

These are examples of the personality characteristics that may contribute to building up the perception of one's own capabilities, which is an important element of possibility. However, some other traits may also be considered, for example, **Adversity Quotient** (Stoltz 1999) or **Ambiguity Tolerance** (Budner 1962; Bochner 1965).

Analyzing the Challenge (Transgression toward the Social Environment)

The tendency for risk-taking is related to the external side of possibility's internal–external balance and involves the appraisal of the task and the reconnoitering of Kurt Lewin's "balance between forces" (Lewin et al. 1939; Lewin 2004). It is usually an informed, meticulous process (Bornstein 1998; Drayton 2002, 2005) and, as such, excludes the **Dunning–Kruger Effect**, that is, a bias in which people mistakenly assess their cognitive ability as greater than it is; in particular, people who are ignorant or unskilled in a given domain tend to believe that they are much more competent than they are (Kruger and Dunning 1999).

Evaluating Possibility

Transgression Surveys

Most transgression surveys are constructed in relation to overcoming one's own resentments and opening oneself for forgiveness (e.g., Berry et al. 2001; McCullough et al. 2006; Wong et al. 2013; Sinha and Lu 2016).

Considering transgression as a more general human property (not limited to forgiveness), a transgression questionnaire was built (Ślaski 2010), following Koziński's transgressionism theory. It consists of 61 statements, belonging to Koziński's scales of transgression, for example, creative, material, psychological, familial, social, occupational, and ethical (having high reliability and fairly good validity) (Ślaski 2010).

However, this analytic approach (i.e., through analyzing components) does not capture the final result of possibility's internal–external balance, which relates to the cognitive process preceding the "doable–not doable" conclusion. In light of this, there seems to be a need for a more summarizing measurement.

Measuring Possibility

Along these lines, the Perception of Doability Questionnaire (PoDQ) was constructed (Praszkier and Zabłocka 2021). The underlying concept was to capture the way people evaluate challenges. Diverse challenges were depicted to determine the generalized (i.e., not dependent on a specific situation) way of reacting. In this spirit, the chosen method was a combination of a projective test (being mostly universal) (Piotrowski et al. 1993) and the Psychology of Life Stories approach (McAdams 2001), that is, asking respondents to evaluate the doability of various challenging situations faced by different persons. The assumption was that respondents will identify with the presented persons and will assess their challenges by reflecting their own approach.

At first, 12 short stories were created, reflecting diverse individuals from diverse

regions of the world facing diverse challenges.² Seven competent raters were asked to evaluate these stories for their clarity and difficulty levels; finally, three stories were selected, which received the highest clarity rating and a high (though not very high) difficulty rating (extremely difficult situations would not differentiate the respondents, as such challenges would be seen by everybody equally as obviously undoable).

The selected stories were about one man (from Kenya) and two women (from Nepal and Columbia). The narrative was located in the moment when these heroes were planning a novel and challenging solution to some insurmountable and, thus far, intractable problems. The Likert-scale statements evaluated the doability, for example, “X seems being on a roll and she/he can do it,” “I doubt if X will succeed,” and “It’s too challenging, X will fail.”

The statements were modified in two validation rounds: $N_1 = 220$ and $N_2 = 1117$ (in a Polish population). Finally, eight (out of 12) statements were identified, having a good discrimination power ($M = 0.72$; $Max. = 0.86$; $Min. = 0.45$; $SD = 0.1$) and good reliability (Cronbach’s alpha for all > 0.8).

Summary and Conclusions

This entry constitutes the first step in identifying and understanding the concept of possibility, which is worth further study. Especially important would be to research how possibility relates to other characteristics, for example, empathy, adversity quotient, or creativity (specifically divergent thinking).

Moreover, the PoDQ has thus far only been tested in the Polish culture; it seems important to adapt it also to other cultures.

Finally, as the possibility level matters in solving human problems, it seems valuable to

identify methods of training, especially of future leaders and the younger generation, so as to augment their propensity for perceiving challenges as doable.

Cross-References

- Creativity
- Tolerance of Ambiguity

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² Based on real-life case studies of mostly social and business innovators, partners, and Fellows of the international organization Ashoka, Everyone a Changemaker (www.ashoka.org)

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Possibility Theory

Didier Dubois and Henri Prade

IRIT, CNRS, Université Paul Sabatier, Toulouse, France

Keywords

Incomplete information · Plausibility · Certainty · Bipolarity · Structure of opposition

Introduction

In common usage, the word “possibility” conveys two main meanings (Hacking 1975). One is physical; then, “possible” means easy to achieve, feasible, as in the sentence “it is possible for Hans to eat six eggs for breakfast.” The other is epistemic; there, “possible” means plausible, as in the sentence “it is possible that it rains to-morrow.”

The formalization of notions of possibility, especially epistemic possibility has a very long history. The modalities *possible* and *necessary* have been present in philosophy at least since the Middle Ages in Europe, based on works by Aristotle and his followers. Thus Theophrastus (c. 371–c. 287 BC) was apparently the first to

develop formal elements of modal logic (Bocheński 1947). Later, works on modalities, in particular temporal ones, have been developed early by Arabic logicians (Rescher 1967). More recently, the modalities *possible* and *necessary* became the building blocks of modal logics that emerged at the beginning of the twentieth century from the works of C. I. Lewis (see Hughes and Cresswell (1968)). In this approach, possibility and necessity are all-or-nothing notions, and handled at the syntactic level, with a semantics for most modal logics in terms of accessibility relations between possible worlds (Gasquet et al. 2014).

This chapter will focus on possibility theory, a setting where possibility and necessity are matters of degree, and which, like probability theory, is based on the notion of set function. It differs from probability theory by the use of a pair of dual set functions (possibility and necessity measures) instead of only one self-dual probability measure (since $Prob(not\ A) = 1 - Prob(A)$, for any event A). Possibility and necessity measures are defined from a possibility distribution which describes a graded plausibility profile over a set of mutually exclusive alternatives. Besides, possibility theory is not additive and makes sense on ordinal structures as well as numerical scales. As we shall see, it is an uncertainty theory devoted to the handling of incomplete information. The qualitative and quantitative versions of possibility theories depart from each other by the way the possibility scale is viewed (as ordinal or numerical), and by the definition of the conditioning operation, respectively, based on minimum operation or on the product.

The name “Theory of Possibility” was coined by Zadeh (1978), who was inspired by a paper by Gaines and Kohout (1975). However, Zadeh was not the first scientist to speak about formalizing notions of possibility. In the following, we first provide a brief overview of proposals made by three forerunners of possibility theory. Then, we present basic ideas and elements of the theory, before exhibiting a structure of opposition involving four set functions at work in possibility theory. Finally we discuss applications of possibility theory, before concluding.

Historical Background

The idea of possibility, as an alternative to probability for modeling uncertainty, was central in the works of one economist, G. L. S. Shackle, and in those of two philosophers, D. Lewis and L. J. Cohen.

G. L. S. Shackle

A graded notion of possibility was introduced as a full-fledged approach to uncertainty and decision in the 1940–1970s by the English economist G. L. S. Shackle (1961), who called *degree of potential surprise* of an event A its degree of impossibility $Imposs(A)$, that is, the degree of necessity Nec of the opposite event, namely $Surprise(A) = Imposs(A) = 1 - Poss(A) = Nec(not A)$.

Shackle's notion of possibility is basically epistemic, it is a "character of the chooser's particular state of knowledge in his present." Impossibility is understood as disbelief. Potential surprise is valued on a disbelief scale, namely a positive interval of the form $[0, r^*]$, where r^* denotes the absolute rejection of the event to which it is assigned. In case everything is possible, all mutually exclusive hypotheses have zero surprise. At least one elementary hypothesis must carry zero potential surprise. The degree of surprise of an event, a set of elementary hypotheses, is the degree of surprise of its least surprising realization. The disbelief notion introduced later by Spohn (1990) employs the same type of convention as potential surprise, but using the set of natural integers as a disbelief scale.

D. Lewis

In his 1973 book (Lewis 1973) the philosopher David Lewis considers a graded notion of possibility in the form of a relation between possible worlds he calls *comparative possibility*. He derives this concept of possibility from a ternary relation of similarity between possible worlds. This nonsymmetric notion of similarity is meant to express statements of the form: *a world j is at least as similar to world i as world k is*. Comparative similarity of j and k with respect to i is interpreted as the comparative possibility of j with respect to k viewed from world i . Such relations are assumed to be complete

pre-orderings and are instrumental in defining the truth conditions of counterfactual statements. Comparative possibility relations $\geq_{II}$ obey the key axiom: for all events A, B, C ,

$$A \geq_{II} B \text{ implies } C \cup A \geq_{II} C \cup B.$$

This axiom was later independently proposed by the first author (Dubois 1986) in an attempt to derive a possibilistic counterpart to comparative probabilities. Such comparative possibility relations are used in the theory of belief revision by Grove (Grove 1988) where they are called systems of spheres, and their dual necessity relation by Gärdenfors (1988) under the name "epistemic entrenchment" (see also (Dubois and Prade 1991)). Besides, the connection between numerical possibility and similarity has been investigated by Sudkamp (2002).

L. J. Cohen

A framework very similar to the one of Shackle was proposed by the philosopher L. J. Cohen (1977) who considered the problem of legal reasoning. He introduced so-called *Baconian probabilities* understood as degrees of provability. The idea is that it is hard to prove someone guilty at the court of law by means of pure statistical arguments. The basic feature of degrees of provability is that a hypothesis and its negation cannot both be provable together to any extent (the contrary being a case for inconsistency). Such degrees of provability coincide with necessity measures.

L. A. Zadeh

Before introducing possibility theory, L. A. Zadeh, originally coming from the fields of electrical engineering and computer sciences, proposed and developed the notion of fuzzy set (1965). In a fuzzy set, elements may have an intermediary degree of membership between complete non membership (0) and complete membership (1), using $[0, 1]$ as a membership scale. Thus, a fuzzy set E on a referential S is defined by a membership function μ_E , and $\mu_E(s) \in [0, 1]$, for $s \in S$, is the degree of membership of s in E . For instance, if E stands for "young," we have $\mu_{young}(20) > \mu_{young}(35)$. Clearly the

definition of μ_E depends on the context: μ_{young} will not be defined in the same way in the context of adult people, or in the more specific context of retired people, or yet in the context of dogs.

Independently from the works of the three previously mentioned authors, Zadeh (1978) proposed an interpretation of membership functions of fuzzy sets as possibility distributions encoding flexible constraints induced by natural language statements. Namely, if all we know about the age of a person, say Peter, is that “Peter is a young adult,” this piece of information will be represented by a possibility distribution such that $Poss(age(Peter) = s) = \mu_{young}(s); \forall s \in S$. Thus, we are uncertain about Peter’s age, and, for example, $s = 35$ will have a degree of possibility of being the value of Peter’s age smaller than $s = 20$.

Moreover Zadeh articulated the relationship between possibility and probability, noticing that what is probable must preliminarily be possible. However, the view of possibility degrees developed in his paper refers to the idea of graded feasibility (degrees of ease, as in the example of “how many eggs can Hans eat for his breakfast”) rather than to the epistemic notion of plausibility laid bare by Shackle, even if in Zadeh’s view, possibility distributions were mainly meant to provide a graded semantics to natural language statements. Nevertheless, the key axiom of “maxitivity” for possibility measures (see below), which fits with the two views, is highlighted by Zadeh (1978).

Basic Elements of Possibility Theory

The basic building blocks of possibility theory were first extensively described in the authors’ books (Dubois and Prade 1980, 1988) and chapters (Dubois and Prade 1998, 2015) (see also (Klir and Folger 1988)). We recall them in this section.

Possibility distribution. Let S be a set of states of affairs (or descriptions thereof), or states for short. A possibility distribution is a mapping π from S to a totally ordered scale L , with top 1 and bottom 0, such as the unit interval $[0, 1]$. The degree $\pi(s)$ estimates to what extent s is

plausibly the actual state. The function π thus represents the state of knowledge of an agent (about the actual state of affairs) distinguishing what is plausible from what is less plausible, what is the normal course of things from what is not, what is surprising from what is expected. It represents a flexible restriction on what is the actual state with the following conventions (similar to probability, but opposite to Shackle’s potential surprise scale):

- $\pi(s) = 0$ means that state s is rejected as impossible.
- $\pi(s) = 1$ means that state s is totally possible (= plausible).

$\pi(s)$ may take intermediary values between 0 and 1; the larger $\pi(s)$, the more possible s is. If S is exhaustive, at least one of the elements of S is a fully plausible actual world, so that $\exists s \in S, \pi(s) = 1$ (normalization). Distinct values may simultaneously have a degree of possibility equal to 1. For instance, if it is known that a numerical quantity lies in an interval $E \subseteq S$, any value in E is totally possible for this quantity and any value outside E is impossible.

Possibility theory is driven by the principle of *minimal specificity*. It states that any hypothesis not known to be impossible cannot be ruled out. More precisely, the possibility degrees should be as high as possible given the available information. A possibility distribution π is said to be at least as specific as another π' if and only if for each state of affairs s : $\pi(s) \leq \pi'(s)$ (Yager (1983)). Then, π is at least as restrictive and informative as π' . Practical methods for constructing possibility distributions are reviewed in (Dubois and Prade 2016).

In the possibilistic framework, extreme forms of partial knowledge can be captured, namely:

- Complete knowledge: for some s_0 , $\pi(s_0) = 1$ and $\pi(s) = 0, \forall s \neq s_0$ (only s_0 is possible); this means that the agent knows or believes that the state of affairs is s_0 .
- Complete ignorance: $\pi(s) = 1; \forall s \in S$ (all states are possible for the agent, because there is no information).

Possibility and necessity functions. Given a simple query of the form “is proposition A true?” where, viewing a proposition as a set of possible states, A is a subset of U , the response to the query can be obtained by computing degrees of possibility and necessity, respectively (if the possibility scale $L = [0, 1]$):

$$\Pi(A) = \sup_{s \in A} \pi(s); \quad N(A) = \inf_{s \notin A} 1 - \pi(s).$$

The value $\Pi(A)$ evaluates to what extent there exists at least one state of affairs in A in agreement with the epistemic state of the agent described by π . It is a measure of consistency of proposition A with the possibility distribution π .

The possibility-necessity duality is expressed by $N(A) = 1 - \Pi(A^c)$, where A^c is the complement of A ; it means that $N(A)$ is all the larger as the opposite event A^c is impossible; $N(A)$ evaluates to what extent all the states of affairs outside A have a low possibility, that is, all the states of affairs with a high possibility are included in A . This leads to interpreting the above expression of $N(A)$ as a degree of certainty of (or belief in) A . Clearly, Π and N increase with set inclusion. Generally, $\Pi(S) = N(S) = 1$ and $\Pi(\emptyset) = N(\emptyset) = 0$.

In the $\{0, 1\}$ -valued case, a Boolean possibility distribution π comes down to the membership function of a classical subset $E \subseteq S$ understood as a set of mutually exclusive possible values for a variable x , and possibility and necessity are then as follows:

- $\Pi(A) = 1$ if $A \cap E$ is not empty, and 0 otherwise: function Π checks whether event A , that is, “ $x \in A$,” is logically *consistent* with the available information “ $x \in E$ ” or not.
- $N(A) = 1$ if $E \subseteq A$, and 0 otherwise: function N checks whether event A (i.e., “ $x \in A$ ”) is logically *entailed* by the available information “ $x \in E$ ” or not (i.e., if A is true in all states of affairs considered possible by the agent).

Possibility measures satisfy a characteristic “*maxitivity*” property $\Pi(A \cup B) = \max(\Pi(A), \Pi(B))$. This expresses that “ A or B ” is possible to the extent that one of A or B is possible. As

opposed to probability, possibility is estimated via the most plausible states in A , neglecting the other states.

Necessity measures satisfy an axiom dual to that of possibility measures, namely $N(A \cap B) = \min(N(A), N(B))$. It means that “ A and B ” is certain to the extent that both A and B are certain. So the necessity function can be viewed as a degree of accepted belief. On infinite spaces, these axioms must hold for infinite families of sets.

A modal logic counterpart of possibility theory, called MEL (Banerjee and Dubois 2014), standing for “Minimal Epistemic Logic”, with a semantics in terms of epistemic states, has been developed for binary possibility and necessity. Possibility and necessity functions Π and N are thus graded counterparts of logical modalities.

Necessity qualification. Human knowledge is often expressed in a declarative way using statements to which a belief/certainty degree is attached. It corresponds to expressing constraints the world is supposed to comply with. Certainty-qualified pieces of uncertain information of the form “ A is certain to degree α ” can then be modeled by the constraint $N(A) \geq \alpha$. The least specific possibility distribution reflecting this information is (Dubois and Prade 1988):

$$\pi_{(A, \alpha)}(s) = \begin{cases} 1 & \text{if } s \in A \\ 1 - \alpha & \text{if } s \notin A. \end{cases} \quad (1)$$

Indeed $N(A) \geq \alpha$ is equivalent to $\Pi(A^c) \leq 1 - \alpha$, which means that states outside A have a possibility degree upper bounded by $1 - \alpha$. Acquiring further pieces of knowledge leads to updating $\pi_{(A, \alpha)}$ into a possibility distribution $\pi < \pi_{(A, \alpha)}$.

A strong possibility function and its dual. Apart from functions Π and N , a measure of *guaranteed possibility* or *sufficiency* can be defined from π (Dubois et al. 2000a): $\Delta(A) = \inf_{s \in A} \pi(s)$. The value $\Delta(A)$ estimates to what extent *all* states in A are actually possible according to evidence. It can be used as a degree of evidential support for all states in A . In contrast, the function Π appears to be a measure of *potential* possibility.

Uncertain statements of the form “ A is possible to degree β ” often mean that all realizations of A are possible to degree (at least) β . They can then be modeled by the constraint $\Delta(A) \geq \beta$. It corresponds to the idea of observed evidence. This type of information is better exploited by assuming an informational principle opposite to the one of minimal specificity, namely, any situation not yet observed is tentatively considered as impossible. This is similar to the closed-world assumption in databases: assuming that what is not reported cannot be true. The most specific distribution, denoted by $\delta_{(A, \beta)}$ in agreement with $\Delta(A) \geq \beta$ is:

$$\delta_{(A, \beta)}(s) = \begin{cases} \beta, & \text{if } s \in A \\ 0 & \text{if } s \notin A. \end{cases}$$

Acquiring further pieces of evidence leads to updating $\delta_{(A, \beta)}$ into some wider distribution $\delta > \delta_{(A, \beta)}$. Such evidential support functions do not behave with the same conventions as standard possibility distributions: $\delta(s) = 1$ means that S is guaranteed to be possible, because of a high evidential support, while $\delta(s) = 0$ only means that S has not been observed yet (hence is of unknown possibility). Distributions δ are generally not normalized to 1, and serve as lower bounds to possibility distributions π representing knowledge (because what is actually observed must not be known to be impossible). The strong possibility function Δ satisfies the characteristic decomposition property $\Delta(A \cup B) = \min(\Delta(A), \Delta(B))$.

Of course, the Δ function possesses a dual function ∇ such that $\nabla(A) = 1 - \Delta(A^c) = \max_{s \notin A} 1 - \pi(s)$. The value $\nabla(A)$ stands as a degree of potential or weak necessity of A , as it is 1 as soon as some state s outside A is impossible. The function ∇ satisfies the characteristic property $\nabla(A \cap B) = \max(\nabla(A), \nabla(B))$. It follows that both functions Δ and ∇ are decreasing with respect to set inclusion. In particular, $\Delta(S) = \nabla(S) = 0$ and $\Delta(\emptyset) = \nabla(\emptyset) = 1$, if $\pi(s) = 0$ for some $s \in S$.

When the possibility distribution δ comes down to the membership function of a classical subset $E \subseteq S$ ($\{0, 1\}$ -valued case), Δ and ∇ become:

- $\Delta(A) = 1$ if $E \supseteq A$ and $\Delta(A) = 0$ otherwise (the direction of inclusion is reversed w.r.t. the necessity function).
- $\nabla(A) = 1$ if $A \cup E \neq S$ and $\nabla(A) = 0$ otherwise.

As highlighted by the complementary nature of conditions $A \cap E \neq \emptyset$, $E \subseteq A$, $E \supseteq A$, and $A \cup E \neq S$ (that insure that the corresponding set functions $\Pi(A)$, $N(A)$, $\Delta(A)$, $\nabla(A)$, respectively, equal 1 in the $\{0, 1\}$ -valued case) altogether provide an encoding of the relative positions of sets A and E . In the graded case, these four set functions induced by the same distribution π are weakly related. Indeed, for all A , the inequality

$$\max(N(A), \Delta(A)) \leq \min(\Pi(A), \nabla(A))$$

holds provided that π and $1 - \pi$ are both normalized. These four set functions can be extended to the case of *fuzzy* events, that is, when A is no longer a classical subset of S , but a fuzzy one (Dubois et al. 2017b), following what was proposed quite early by Zadeh for weak possibility measures (Zadeh 1978).

Representing bipolar information. Handling potential (π) and actual (δ) possibility gives birth to a *bipolar* representation of information (Dubois and Prade 2009). It uses pairs of distributions (δ, π) , where π describes the fuzzy set of values that are not impossible (negative information), while δ describes a fuzzy subset of values that are for sure possible to some extent (positive information). We should have $\forall s; \delta(s) \leq \pi(s)$ for consistency reasons. Possibility theory can thus model bipolar uncertainty, distinguishing between what is actually possible (to some extent) because reported from observations and what is only not ruled out by prior knowledge. Note that possibility distributions induced from certainty-qualified pieces of knowledge combine conjunctively, by discarding possible states, while evidential support distributions induced by possibility-qualified pieces of evidence combine disjunctively, by accumulating possible states.

Besides, this formal setting also makes sense for modeling preferences (Benferhat et al. 2006). Then, the degree $\pi(s)$ estimates to what extent alternative s is not rejected as violating a

constraint, while the degree $\delta(s)$ expresses to what extent s is really satisfactory according to a goal or a desire. The function Δ , thanks to its decomposition property, is instrumental in the modeling of the strength of positive desires (Dubois et al. 2017a).

Conditioning. Notions of conditioning and independence exist for possibility measures. Conditional possibility is defined similarly to probability theory using a Bayesian-like equation of the form (Dubois and Prade 1988)

$$\Pi(B \cap A) = \Pi(B|A) \star \Pi(A)$$

for some suitable operation $\star$. In the numerical setting (when possibility degrees take their values in $[0, 1]$), $\star$ is taken as the product as for probability. However, in the qualitative setting, where one uses a discrete bounded linearly ordered scale, the operation $\star$ cannot be a product and is changed into the minimum.

This remark highlights the two main directions along which possibility theory has been developed: the qualitative and the quantitative settings (Dubois and Prade 1998). Both approaches share the same basic “maxitivity” axiom, but differ when it comes to conditioning, and to independence notions. There are several variants of possibilistic independence (De Cooman 1997; De Campos and Huete 1999; Dubois et al. 1997). Generally, independence in possibility theory is neither symmetric nor insensitive to negation. Even for Boolean variables, independence between events is not equivalent to independence between variables.

Possibility and probability. Possibility theory is a graded theory of uncertainty that somewhat formally parallels probability theory. Possibility theory however departs from the latter by relying on two pairs of dual set functions rather than being based on a unique auto-dual measure. In quantitative possibility theory, possibility and necessity measures can be respectively viewed as upper bounds and lower bound of an ill-known probability (Dubois and Prade 1992). Besides, numerical possibility and necessity measures are special cases of plausibility functions and belief functions respectively, in the sense of Shafer evidence

theory (Shafer 1976, 1987). Lastly, there exist bridges that enable the transformation of probability distributions into possibility distributions, and conversely, under some assumptions (Dubois et al. 1993): from possibility to probability using an extension of Laplace insufficient reason principle; from probability to possibility using dispersion or confidence intervals.

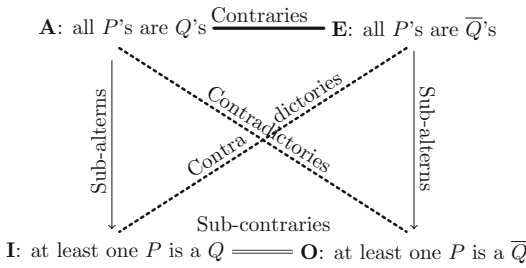
In summary, possibility theory is somewhat similar to probability theory, due to the use of set functions. However, possibility functions are maxitive rather than additive; the dual of a possibility function is another set function expressing degrees of certainty. Incomplete information is more faithfully represented in possibility theory than in probability theory.

The Structure of Opposition Underlying Possibility Theory

The interest for structures of opposition is very old. It dates back to Aristotle time where the square of opposition was built in relation with the discussion of syllogisms. The square of opposition applies both to first order logic and modal logics. We first recall it before presenting the structure of opposition underlying possibility theory. The traditional square of opposition is built with universally and existentially quantified statements in the following way. Consider four statement of the form (A): “all P ’s are Q ’s,” (O): “at least one P is not a Q ,” (E): “no P is a Q ,” and (I): “at least one P is a Q .” They can be displayed on a square whose vertices are traditionally denoted by the letters **A**, **I** (affirmative half) and **E**, **O** (negative half), as pictured in Fig. 1 (where $\bar{Q}$ stands for “not Q ”).

As can be checked, noticeable relations hold in the square provided that there is a non-empty set of P ’s to avoid existential import problems:

- (i) **A** and **O** (resp. **E** and **I**) are the negation of each other.
- (ii) **A** entails **I**, and **E** entails **O** (it is assumed that there is at least one example of P).
- (iii) **A** and **E** cannot be true together.
- (iv) **I** and **O** cannot be false together.

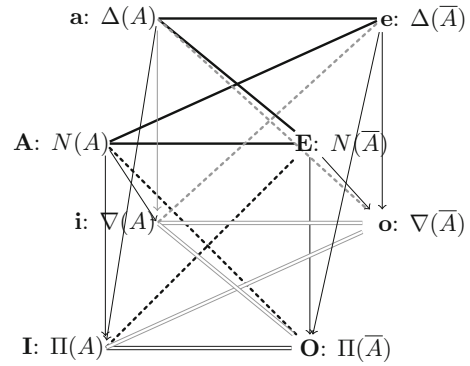


Possibility Theory, Fig. 1 Square of opposition

Another classical example of such a square is obtained with modal logic operators by taking **A** as $\Box p$ (necessarily p), **E** as, $\Box \neg p$ (necessarily “not p ”), **I** as $\Diamond p$ (possibly p), and **O** as $\Diamond \neg p$ (possibly “not p ”), where the duality $\Box p = \neg \Diamond \neg p$ holds.

This structure was almost forgotten with the advent of modern logic after G. Boole. It was rediscovered by Blanché (1966) and then by Béziau (2003), who advocate its interest. Switching to first-order logic notations (e.g., **A** becomes $\forall x, P(x) \rightarrow Q(x)$), and negating the predicates, that is, changing P into $\neg P$, and Q in $\neg Q$ leads to another similar square of opposition **aeoi**, where we also assume that the set of “not- P ’s” is non-empty. Altogether, we obtain eight statements that may be organized in what may be called a *cube of opposition* (Dubois and Prade 2012; Dubois et al. 2020). The front facet and the back facet of the cube are traditional squares of opposition, and the two facets are related by entailments.

Such a structure can be extended to graded notions (Ciucci et al. 2016), using an involutive negation such as $1 - (\cdot)$, and where the mutual exclusiveness of **A** and **E** translates into a sum of degrees less than or equal to 1, while entailments are translated by inequalities between degrees (in agreement with multiple-valued implications defined by residuation). An example of a graded cube is obtained in possibility theory (Dubois et al. 2017b). Indeed, assuming a normalized possibility distribution $\pi: S \rightarrow [0, 1]$, and also assuming that $1 - \pi$ is normalized (i.e., $\exists s \in S; \pi(s) = 0$), we obtain a cube of opposition on Fig. 2, linking $\Pi(A)$, $N(A)$, $\Delta(A)$, $\nabla(A)$, $\Pi(\bar{A})$, $N(\bar{A})$,



Possibility Theory, Fig. 2 Cube of opposition of possibility theory

$\Delta(\bar{A})$, and $\nabla(\bar{A})$. The front and back facets form two squares of opposition, while the side facets express a different property, namely they acknowledge the inequalities $\min(\Pi(A), \nabla(A)) \geq \max(N(A), \Delta(A))$. The thick lines of the top facet means that the sum of the corresponding degrees is less or equal to 1, while the bottom lines of the bottom facet means that the sum of the corresponding degrees is larger or equal to 1. Since these set functions rely on ideas of graded inclusion and degrees of non-empty intersections, the fact that they fit with a graded structure of cube of opposition should not come as a surprise. Thus, the cube in Fig. 2 summarizes the interplay between the different measures in possibility theory.

Applications

Possibility theory has applications in many areas (Dubois and Prade 2015). The main one is the propagation and combination of uncertainty. This takes different forms. In approximate reasoning (Zadeh 1982), possibility distributions representing pieces of information are combined and projected for deriving restrictions on variables of interest. This is also a setting for extending all the results and tools from constraint propagation in Artificial Intelligence (AI), to flexible or prioritized constraints (Dubois et al. 1996). Possibility theory has been applied early to computation with

fuzzy intervals (Dubois et al. 2000b): Given two ill-known quantities x and y represented by possibility distributions on the real line, one computes the possibility distribution restricting the possible values of $f(x, y)$ where f is some function.

Possibilistic logic (Dubois et al. 1994; Dubois and Prade 2014, 2018, 2019) extends classical logic with certainty levels modeled by lower bounds of necessity measures, and has a semantics in terms of possibility distributions over sets of interpretations. Generalized possibilistic logic (Dubois et al. 2017c), a weighted extension of MEL (Banerjee and Dubois 2014), handles both necessity and possibility as graded modalities. This logic has found various applications to many AI problems, in relation with the representation of epistemic states and their handling when reasoning from and about them. The qualitative possibilistic setting also applies to *exception-tolerant reasoning* by providing a simple method for making assumptions about the normal course of things, inferring provisional plausible conclusions, and revising these conclusions when new information comes in (non-monotonic reasoning) (Benferhat et al. 1998). Possibility theory also applies to *information fusion* (Benferhat et al. 2002b; Dubois et al. 1999). Besides, possibilistic logic has graphical counterparts under the form of possibilistic Bayesian-like nets (Benferhat et al. 2002a) which may have a qualitative or a quantitative flavor depending on the type of conditioning which is used.

Possibility theory also has applications in information systems. It uses a *fuzzy pattern matching* mechanism where patterns express flexible requirements modeled by means of fuzzy sets, and data (describing items) pervaded with imprecision and uncertainty are represented by means of possibility distributions (Dubois et al. 1988). The querying (Pivert and Prade 2015) and the design (Link and Prade 2019) of databases pervaded by uncertainty can be processed in the possibilistic setting.

Qualitative decision theory (Dubois et al. 2001; Fargier and Sabbadin 2005) is also worth mentioning. Ordinal possibilistic substitutes to rational decision making criteria under

probabilistic uncertainty can be devised, for the modeling of optimistic and pessimistic attitudes in the face of risk, and for one-shot decisions. These attitudes respectively correspond to computing the possibility and the necessity (certainty) that the chosen decision yields a good result.

Conclusion

This brief introduction to possibility theory does not intend to cover every aspect of the theory and all the issues related to it. It is just a survey of basic notions and ideas underlying it. As suggested above, it is a very versatile tool because it can be purely qualitative (valued on a finite symbolic scale or even just comparative), or fully numerical. Possibility often refers to partial belief, but may be interpreted in terms of degrees of preference. Possibility theory lies at the crossroads of many approaches to the modeling of commonsense and uncertain reasoning: It has close connections with fuzzy set theory, probability theory, non-monotonic reasoning, and belief revision. A strong point of possibility theory at the conceptual level is its ability to deal with imprecision, incompleteness, uncertainty, and fuzziness tainting pieces of information, within the same framework. It can be seen either as a coarse, non-numerical version of probability theory, or a simple approach to reasoning with imprecise probabilities, or yet a framework for reasoning with extreme probabilities (Dubois and Prade 1998).

Appendix/List of Symbols Used

π	possibility distribution
L	scale, here $L = [0, 1]$
S	set of potential states of affairs
$\emptyset$	empty set
Π	(weak) possibility function
N	(strong) necessity function
Δ	(strong) possibility function
∇	(weak) necessity function

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Possibility Thinking

Yu-sien Lin
Department of Education, Chinese Culture
University, Taipei, Taiwan

Abstract

Possibility thinking is a term proposed by a UK researcher Anna Craft (1961–2014) to describe creative abilities and qualities valued in the field of education. Therefore, it is closely related to the concept of “little c creativity,” and ordinary, everyday, or democratic creativity, in contrast to the “big C creativity.” The approach of nurturing learners’ possibility thinking through education generally adopted two premises of creativity: Creativity can be developed, and all individuals have the potential to be creative. In the early stage of developing the concept by Craft and her colleagues, nine qualities of possibility thinking were put forward, involving self-determination and direction, innovation, action, development, depth, risk, being imaginative, posing questions, and play. In addition, useful pedagogical strategies to foster these qualities have been

documented – for instance, standing back, profiling learner agency, and creating time and space. Based on the premises and pedagogical principles of possibility thinking, more research explored how learners, from early year to primary and secondary education, manifest the features of possibility thinking in their learning. Other research identified the connection between possibility thinking and children’s creative learning process, or identified the pedagogical strategies in different areas, such as dance, art, drama, mathematics, or science, that foster learners’ possibility thinking. Albeit the life of Anna Craft came to an abrupt end in 2014, the critical notion of possibility thinking may continue to offer its useful insights in educational practices, as well as research, as long as exploring possibilities remains fascinating.

Keywords

Creative qualities in education · Little c creativity · Creative learning process · Pedagogical strategies

Situating Possibility Thinking in the Research of Creativity

The notion of “possibility thinking,” although informed by creativity research in the psychological field, is not a psychological term but a term proposed by a UK researcher Anna Craft (1961–2014) to describe the creative abilities and qualities valued in the field of education. It is closely related to the concept of little c creativity, which recognizes the creative potential of ordinary people and the possibility that creativity can be nurtured through education. Creative abilities such as imagination, posing questions, and play are considered main elements of possibility thinking demonstrated throughout an individual’s creative engagement with the environment by asking the question: “what if.” Possibility thinking presents a clear opportunity to integrate creativity and the possible as a field of inquiry (Glăveanu 2018). Possibility thinking, or *what if* thinking, was put forward in the late 1990s in a

creativity discourse which Jeffrey and Craft (2001, p. 1) described as “a universalization of the conception of creativity,” and that highlighted the relation between economy, labor force, and individual creative capabilities. This chapter explores the connection between possibility thinking and creativity within the field of the possible.

A Brief History of Creativity Research

Creativity is embraced broadly, as a capacity for coping with life’s problems effectively, and is seen as a necessity for all, rather than the rare gift and a luxury for the few (Craft 2005; Jackson et al. 2006). Enhancing creativity became one of the salient objectives in education at the turn of the twentieth century and remains a focus into the twenty-first century. This discourse around creativity is different from those formed in the history of creativity research in western societies.

For instance, Plato’s argument predominated in the past, suggesting the source of artistic and creative expression was divine intervention, a mystical source of human inspiration (Sternberg 2003). This general concept of creativity had not receded until the Renaissance and the Age of Enlightenment, when people started to look for the source of creativity in the inner self of individuals (Hammer 2002). By the end of the nineteenth century, varied definitions and research themes focused on creativity had evolved. Specifically, five main themes within creativity literature in the nineteenth century can be summarized (Becker 1995) as follows:

1. How is creativity defined?
2. Who has creativity?
3. The characteristics of creative people.
4. The appropriate uses of creativity.
5. Can creativity be increased through conscious effort?

Though creative genius became the major theme of research and the belief that creativity was the inherited ability of prodigies predominated (Hammer 2002), these questions and themes continue drawing the attention of creativity researchers nowadays.

In the first half of the twentieth century, a shift occurred in both the research approach and research topics. Four major traditions emerged in psychological studies of creativity, and each represented distinct views of the human mind and explanations of creativity (Ryhammer and Brodin 1999). The psychoanalytic tradition conceived human's drives (such as love or power) or unconscious conflicts as the source of creativity. The cognitive tradition explored the relation between creativity, intelligence, and giftedness or focused on individuals' creative processes. While the behaviorist believed creative behavior and personality can be conditioned by external factors, the humanistic tradition described creativity as a part of human nature and the innate need to experience higher values that fulfill individuals' lives. Rather than focusing on external regulation and coercion to achieve creativity, humanistic psychology has emphasized the importance of autonomy and individual growth within education and personal development.

Insights from theoretical and empirical research continued to inform the framework of creativity studies from the second half of the twentieth century, onward. By the 1950s, substantial empirical research of creativity was conducted and can be categorized into six approaches: pragmatic, psychometric, cognitive, social-personality, evolutionary, and confluence (Baer and Kaufman 2006; Sternberg 2003). Notably, some of these approaches contributed important ideas and momentum to the rhetoric nowadays of nurturing children's creativity through education.

For instance, the **psychometric approach** measures cognitive abilities, such as divergent thinking, involved in the individual's creative process, as well as personal traits that affect creative orientations, such as curiosity, and being attracted to novelty (Sternberg 2003). In addition to identifying creative cognitive abilities, the **cognitive** researchers also analyzed the thinking process and mental representations underlying creative thought (Baer and Kaufman 2006). These research attempts of conceptualizing creativity as different cognitive abilities or personal dispositions shed light on the research of possibility thinking, which related to and enhanced the

cognitive and psychometric perspectives in creativity research by focusing attention on the capacity of individuals to see beyond what is or has been and find new solutions.

Due to the interest of developing individual's creative thinking skills, certain training programs were proposed, including the thinking tools (six thinking hats) suggested by Edward De Bono (1985) and brainstorming techniques which have been widely applied and researched (Fryer 1996; Parnes 1963; Sternberg 2003). The assumptions and techniques these creativity training programs promoted were described as the **pragmatic approach** and have generated implications for both school teaching and organizational training. Another approach, the **social psychological approach**, also generated implications for fostering creativity by exploring the relationship between personality traits, the social context, and creativity. A diversity of personality traits associated with creativity were identified, such as self-confidence, openness, spontaneity, and risk taking (Baer and Kaufman 2006; Hennessey 1995, 2007). Each of these approaches suggests different ways that possibility thinking arises in the creative process of individuals and is explored in research.

An important distinction was made by creativity researchers between "big C" and "little c" creativity (Craft 2001b; Gardner 2004), which offered support to the concept of possibility thinking as an entry point for everyday creativity. Big C creativity indicates the influence of individuals and their work in society and culture, and little c creativity targets the everyday creative attitudes, thinking, and behaviors across domains in life, such as "what if" possibility thinking. Some researchers termed the two ends of creativity as "high creativity" or "historical creativity" and "ordinary creativity" or "democratic creativity." High creativity gets recognized by experts and demonstrates paradigm-shifting impact within the culture (Boden 2001; Csikszentmihalyi 1996, 1999; Feldman et al. 1994). Ordinary creativity (NACCCE 1999; Craft 2001a, 2005) focuses on the agency and potential of ordinary people to be creative when facing everyday problems (Craft 2001a, b). In some way, product-oriented

creativity perspectives share the same view of big/high c creativity in terms of the criteria and method of judging creativity, whereas little c creativity is not necessarily linked with a product outcome. Thus, the debates and distinctions gradually led to the discussion of the kind of creativity that is more valued in the education setting. These debates and complementary perspectives have continued to generate new possibilities in the field of creativity, including the concept of possibility thinking.

Creativity in Education

Before discussing possibility thinking, it is important to understand how research and conceptualization of creativity has intersected education. As mentioned, the connection between creativity and education can be traced back to the debate about whether creativity can be developed through education (Becker 1995; Esquivel 1995). Creativity research shifted focus to ordinary people inside and outside education while the movement toward child-centered and innovative pedagogy built momentum after the 1950s. Alongside those shifts, more calls for reforms to traditional school practice and curriculum followed, particularly in the USA and UK (Craft 2001a; Esquivel 1995). Creativity research in scholarly fields, such as psychology, and the child study movement played a role in this shift in education (Feldman and Benjamin 2006) through concerns about techniques and approaches. For instance, John Dewey's (1964) advocacy of children's play became influential. The Piagetian cognitive-developmental programs encouraged children to generate original ideas and built momentum. Montessori's approach emphasized the importance of self-expression for fostering creative skills. Lev Vygotsky's cultural-historical theory emphasized the social process in child development (Craft 2001a; Esquivel 1995; Fryer 1996). However, the educational reforms informed by the theories and practices of creativity waned due to widespread critique of child-centered practices, which was fueled by an apparent decline in academic performance (Craft 2001a; Esquivel 1995; Feldman and Benjamin 2006). During the last decade of the twentieth century, creativity was

once more recognized as an important aim of education.

The approach to creativity in education, from the 1990s onward, has been distinct from the past. Although mainly drawing from existing theories of scholarly research in creativity, such as cognitive, social-psychological, or humanistic approaches, the approach, as Craft (2005) suggested, was revolutionary and confrontational, challenging accepted norms and practices in education. Still underway three decades later, the focus continues to target how creativity must be considered in relation to knowledge, curriculum, and pedagogical strategies in order to create an educational setting conducive to creative development.

Reflecting rapid social and economic changes, creativity has become a survival capacity to thrive in this ever-evolving world. The need to grow human capital – young people's competitiveness – by fostering creative capacities through education was highlighted and prioritized at the onset of the twenty-first century (Choe 2006; NACCCE 1999; Thornburg 2002). The premise that creativity can be developed, that all individuals have the potential to be creative, and that creative potential is vital for individual and societal success underpinned the new approach to connect creativity and education (Craft 2001a; Esquivel 1995; Feldman and Benjamin 2006; NACCCE 1999). Informed by this frame and urged by social need, curriculum reform was carried out to include creativity as an educational aim in education policy in western countries, including the UK (Feldman and Benjamin 2006; Craft 2005; Shaheen 2010).

The attempts to reignite creativity in education in England in the early twenty-first century (Craft 2005) were attributed to the report "All our future" of National Advisory Committee on Creative and Cultural Education (NACCCE 1999), which advocated a "democratic notion of creativity in learning and pedagogy" (Craft et al. 2013). The impetus initiated by the NACCCE was followed by further development of other policy and attention to creativity in the curriculum, including the National Curriculum. Innovative teaching and teaching for creativity in schools were encouraged, as well as the integration of

the arts and culture into education through initiatives, such as the Creative Partnerships project (Craft et al. 2007) which involved arts practitioners, schoolteachers, and researchers. Although in 2010 the education policy in England experienced a shift of values and perspectives due to a change of government, the commitment to developing creativity of students from early years to secondary education continued (Craft and Chappell 2016). Across these initiatives in policy and education, there was a common committed advocacy for “little-c” creativity (LCC; Craft and Chappell 2009), “the kind of creativity which guides choices and route-finding in everyday life” (Craft 2000, p. 3). Within this strand of nurturing LCC; Craft (1999, 2000, 2001a, b) proposed the notion of “possibility thinking” as the “engine” of creativity (Craft 2000, p. 7) as well as to illustrate the features of LCC. She framed the notion as relevant to both convergent and divergent thinking and refused to confine it to arts-related domain (Craft 2000). Possibility thinking, thus, became a new approach to inquiry and practice to understand and operationalize creativity in education.

Research of Possibility Thinking

Since the mid-1990s, a series of studies explored the concept of possibility thinking (PT), which can be divided into three stages (Craft and Chappell 2016; Craft et al. 2013).

In the earliest phase of PT research, mainly conceptual work, Craft (2000, 2001a) and her colleagues focused on theorizing aspects of creativity in education, for instance, teachers’ conceptions of creativity, and what type of creative development should be valued (Craft 1999, 2001a; Jeffrey and Craft 2001). PT was conceptualized as the core of LCC, involving three clusters of abilities – questioning, imagination, and combinatorial play – that manifest the aspiration of asking the question “what if” when facing blockage. Within these three aspects of creative engagement with problems and challenges, nine qualities were proposed to observe classroom practices as well as children’s learning: self-determination and

direction, innovation, action, development, depth, risk, being imaginative, posing questions, and play (Craft 2001a, b). In this first stage (2002–2006), the enquiries focused on PT and pedagogy with children from 3 to 7 years old. Several interlinked features of classroom teaching that nurture children’s PT were identified, including teacher’s standing back, profiling learner agency, and creating time and space to encourage children’s engagement and exploration in learning (Cremin et al. 2006). The characteristics of PT demonstrated in children’s creative engagement at this stage were refined as posing questions, self-determination, intentionality, play, immersion, innovation, being imaginative, and risk-taking.

In the second phase, according to the review of PT research by Craft et al. (2013), the conceptual studies shifted into empirical work around 2002. The second stage of PT research from 2006 to 2007 focused on the specific feature of PT called “question-posing,” manifested by children 5–7 years old in a playful and enabling learning environment. The core components of PT identified in Stage 2 were question-posing (Q-P), question-responding (Q-R), being imaginative, risk-taking, action/intention, self-determination, play, and immersion. Among the components, play and immersion were found to be salient elements to provide the context for PT. The learning process was characterized by children taking intentional action (i.e., action/intention) and infused with autonomy and agency (i.e., self-determination).

In the third stage (2008–2012), further research was carried out to explore children’s Q-P and Q-R. That research identified a variety of question types that reflected children’s Q-P and Q-R (Chappell et al. 2008). In addition, PT research returned to the early focus about the nature of PT and the pedagogical strategies teachers adopt to foster PT. In this phase of the research, work with pupils aged 9–11 broadened the developmental understanding of PT. Several studies focused on defining types of relations between Q-P and Q-R, as well as other characteristics of PT. That research confirmed the significance of children’s verbal and nonverbal questioning in their creative

learning (Chappell et al. 2008; Craft et al. 2013) and highlighted the importance of imaginative and playful behavior among older children (Craft et al. 2013). One of the features of PT, “risk-taking,” defined as the quality of moving into an unknown space with courage (Burnard et al. 2006), could not be observed among older children aged 9–11 (Craft et al. 2013), and the same result occurred in a more recent study with adult participants (Craft and Chappell 2016). However, “risk-taking” was identified as one of the core features of PT in another study in this stage about the play in younger children (4 years old, Craft et al. 2012). By reanalyzing the research data of earlier studies spanning the whole primary age range, a study by Cremin, Chappell, and Craft (2013) reported the inherent role of narrative storytelling of children in shaping their questions and imagination, leading to their “as if” thinking.

From 2012 onward, the studies extended conceptualizing of PT, broadening the population of research participants, and contributed new research findings to the field. First, PT was conceived in previous studies as “what-if” and “as-if” thinking, representing the action of asking the “what if” question and driving creative changes to take place. Nonetheless, Craft et al. (2013) started to consider the potential influence of PT and linked it to the concept of wise and humanizing creativity (WHC; Chappell and Craft 2011), which is believed to be able to generate a “quiet revolution,” a kind of “social change valued by the community as a whole in which participants play co-emancipatory roles” (Craft et al. 2013, p. 540). Framing PT as the catalyst of social change, PT researchers began to explore at a small scale how schools, particularly the head teachers, engaged in school change through the frame of PT (Craft and Chappell 2016). Unlike earlier PT studies focusing on the creative engagement of children from 2–11 years old, the recent study in 2016 shifted its attention to adults’ creative response in a broader educational context. This research reinforced the role of QP and QR as well as other features of PT, including imagination, self-determination, action/intention, innovation, and narrative. However, risk-taking was not clearly

demonstrated by the head teachers during their own quiet revolutions to bring about positive change in their schools. Play and immersion were deemed as contextual features (the features that were embodied in the enabling context that encourages PT) rather than core features (the features of PT framing the creative changes in the schools) in this study. One emergent feature, collaboration, however, appeared to drive creative change, which reflected the findings of several past studies (Craft et al. 2012, 2013; Craft and Chappell 2016). Collaboration among peers enhanced the conditions and potential of PT for teachers.

The review of PT research explored thus far characterizes a linear timeline with shifts and growth in research focus and conceptualization of PT. Within the curricular context, research has explored the nature, development, and catalyst of PT in early year, primary, and secondary school teaching. If being categorized by research focus in different learning areas, PT has been explored within mathematics (Clack 2011; Craft et al. 2013), English (Craft et al. 2012; Cremin et al. 2013), geography, science, art (Craft et al. 2013; Pavlou 2013), museum education (Gregoriou 2014), dance (Chappell 2006; Craft and Chappell 2009), and drama (Aristeidou 2013; Lin 2010, 2014). Findings reported from these studies form or support the previous understanding of the characteristics of PT, particularly manifested in varied creative learning contexts. Some findings among this research contribute to identifying peer collaboration as an emergent feature of PT and confirming the relationship between narrative, imagination, and questioning. Other findings generated pedagogical implications of nurturing PT through teaching creative dance movements, drama activities, or linking resources like interactive museum visits, as well as generating insights and new possibilities of hybrid pedagogy for fostering PT in different sociocultural contexts such as an Asian context.

If looking at the development of PT (see Table 1), it was first theorized by conceptual work as the core aspect and engine of little *c* creativity, concerning ordinary people when coping with everyday life challenges, and later explored

Possibility Thinking, Table 1 Nature and characteristics of PT

Stages		Components
Earlier conceptual work		Self-determination and direction, innovation, action, development, depth, risk, being imaginative, posing questions and play
Empirical work	Stage 1 (2002–2006)	Posing questions, self-determination, intentionality, play, immersion, innovation, being imaginative, and risk-taking
	Stage 2 (2006–2007) and Stage 3 (2008–2012)	Question-posing (Q-P), question-responding (Q-R), being imaginative, risk-taking, action/intention, self-determination, play, and immersion
	Studies since 2012	Q-P, Q-R, imagination, self-determination, action/intention, innovation, narrative, and collaboration

empirically regarding how it is manifested or nurtured during creative engagement in an abling context, mainly in early-year and primary education. The research population was broadened recently to adults and the research implications, therefore, broadened to concerning wise and humanizing creativity valued in the community. The specific context in which PT arose held a different discourse around creativity from the historical context that formed creativity research. As PT arose during a period of increasing focus to enhance creative capacities in the broader population, as a form of human capital, little c creativity at different life stages became a shared focus between PT and creativity research. The concept of PT brought a new perspective to creativity research and lead to a new territory of research exploration. The features of PT identified in different research stages have continued to reflect not only the competencies desirable in the educational context, but also the qualities and mindset every individual (from children to adults) needs to thrive in society nowadays to overcome inevitable difficulties and envision new possibilities. The field of PT needs continued work on understanding its developmental nature from the early years to later stages of adulthood – a potential synergy between PT researchers and the possible as a field of inquiry.

Conclusion

Possibility thinking can be considered essential to the possible as a field of inquiry, but research outside of education has yet to develop. Within education, PT research has evolved from creativity research

and helped to understand the key role of question-posing and question-responding in the creative learning process. The concept of possibility thinking was proposed in a universal revive of fostering creativity through education at the turn of the twentieth century. Creativity was reconceptualized then as a capacity for coping with life’s challenges and problems effectively, and as a necessity for everyone to thrive. Enhancing creativity through education to raise competitiveness and economic performance became a salient objective, particularly in the context of the UK. This social and political discourse promoted little c creativity, a democratic notion of creativity, in contrast to an earlier emphasis on big C creativity. Within this strand of nurturing creative potential, Craft proposed PT as a core part of the creative process, conceiving of PT as the aspiration of asking the question “what if” when facing everyday problems, building from three clusters of abilities involving questioning, imagination, and combinatorial play.

Since 2002, empirical studies have been conducted to support the earlier conceptualization of PT, and the research foci mainly explored the nature of PT and the undergirding pedagogical strategies that foster PT in the education of early years, primary, and secondary school. The characteristics of PT were further developed and refined as the studies moved into different stages. In more recent years, the PT researchers extended the conceptualization of PT by connecting it with the concept of wise and humanizing creativity (WHC) and looked at how adult participants manifest PT when engaging in school change. Although the life of Craft came to an abrupt end in 2014, the notion of possibility thinking may

continue to offer a useful framework for inquiry into the possible across many fields and domains, including educational practice.

Cross-References

- Collaborative Creativity
- Creative Development
- Creative Learning
- Creative Problem-Solving
- Creativity
- Imagination

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The Possible and Donald Winnicott

Tania Zittoun¹ and Paul Stenner²

¹Institute of Psychology and Education, University of Neuchâtel, Neuchâtel, Switzerland

²School of Psychology and Counselling, The Open University, Milton Keynes, UK

Abstract

Winnicott was a British psychoanalyst famous for identifying an area of experiencing between inner psychic life and social reality called the potential space. In his work, potentiality is what can emerge on the basis of what is already there, or, in other words, it is there, where new possibilities can emerge. The idea of potentiality – and a practical concern with the possibility of possibility – can be found at the heart of all aspects of his work. First, as a researcher, he pragmatically expanded the psychoanalytical tradition on the basis of his unique clinical experience. Second, as a theoretician, he developed an understanding of human development whereby the child emerges as a person within a good-enough environment, and, in a first phase, differentiates from the carer thanks to a complex and paradoxical process of self-formation through symbol use. These observations led him to propose the ideas of transitional phenomena or potential space. What might be called “potential phenomena” (or phenomena of potentialization) mark the beginning of symbolism in the play between infant and carer and evolve via more elaborate child's play into the cultural experiencing and creativity that can continue throughout adulthood. Third, in his clinical work, Winnicott considered psychotherapy as a technique for creating a potential space to engage in a form of shared play. For children or adults who lacked the possibility to play, these therapeutic spaces aimed to provide a good enough environment – institutional, relational – within which the person can come to experience phenomena of potentialization which render the possible, possible.

Keywords

Winnicott · Object relations · Psychoanalysis · Transitional objects · Transitional phenomena · Third space · Potential space · Cultural experiencing

Introduction

Donald Woods Winnicott was born in Plymouth in 1896 and died in 1971. His higher education at Cambridge was interrupted by World War I, and he became a medical trainee in a temporary hospital before becoming a medical officer on HMS Lucifer, a Royal Navy destroyer. His subsequent clinical training at St Bartholomew's, London, included a phase during which he was influenced by his reading experience of Freud's *Interpretation of dreams* (Freud 2001), and after being analyzed himself he became a core member of the "independent" tradition of British psychoanalysis.

Always respectful of and influenced by the two intellectual traditions of Freud and his followers as well as of Melanie Klein and her group, Winnicott nevertheless pursued his own direction in psychotherapy, and his highly original reflections and theorizations were thoroughly grounded in his extensive clinical experience with children, adults, and fellow professionals.¹ Perhaps, Winnicott's most influential original contribution, and certainly the most relevant to the theme of "possibility," is his theory of transitional phenomena.

His initial essay on transitional objects and transitional phenomena dates from 1953 and was republished in 1971, the year of his death, as part of a wider volume *Playing and reality*, which connects transitional phenomena to crucial topics such as playing, dreaming, fantasizing, cultural² experiencing, and creating more generally. In remarks scattered throughout this volume, he

makes clear exactly how and why his thinking about transitional phenomena differs from existing psychoanalytical theory. Without documenting these remarks here, the crucial difference concerns what Winnicott calls the *location* of transitional phenomena including playing with, and among children, and cultural experiences among adults.

That location is neither "inside" the mind of the individual nor "outside" in reality. Rather, such experience unfolds precisely *between* individual and world such that "the behaviour of the environment is part of the individual's own personal development" (Winnicott 1991, p. 72) and therefore must be included in any adequate description of human emotional development. During infancy, that behaving "environment" is constituted by the primary caregiver, and Winnicott refers to this ambiguous and ambivalent "location" between "the mother and the baby" as the *third area* or the *potential space*. Obviously, all sorts of essential activities happen between caregiver and infant (feeding, clothing, cuddling, and communicating), but for Winnicott an essential possibility afforded by this potential space is for play to occur, but – as summarized below – this "play" must not be understood in a trivial manner. First, play is neither part of external reality nor internal reality but is *at play* between them, and second, it is thus a phenomenon that can never be understood in relation to either the care-giver or to the infant taken alone. Once adequately established, the play that occurs within the potential space forms the basis for any forms of vitality, creativity, symbol use, or "cultural experience" – such as they are – that continue to exist within the lives of adults.

Playing, for Winnicott, is thus directly connected to creativity, and he insists that without play there can be no creativity, and without creativity there can be no self-discovery. The third or potential space is the place wherein imaginative possibilities and symbolic capacities can be cultivated and entertained in a manner that enriches life and renders it flexible enough to reach out from its past to an ever-emerging future. In his 1971 book, Winnicott shows that the potential space, emerging early in development, is not only the basis of creativity in life, but also, of human capacity to enjoy cultural experiences

¹ This included collaborators from all sectors of care, such as nurses, social workers, priests, etc., and also years of work with displaced children and mothers, and with young delinquents in various shelters and camps

² "Culture" here means an ever-expanding pool of inherited tradition including myth, religion, science, games, and the various arts

(listening to music, feeling poetry) and participation to culture – doing art, religion, or science. In effect, in each case, these experiences occur between one's psychic reality and the social world, or also between tradition and one's unique contribution: "*it is not possible to be original except on the basis of tradition*" (Winnicott 1991, p. 134). The traditions of the past allow us to inherit what Winnicott called a *pattern* that, ideally, can serve as the basis for forms of inventiveness that are suitable for present circumstances. In that sense, the potential space is what makes human and social development possible.

The idea of the possible, emerging between tradition and personal creativity, within a potential space, is at the heart of Winnicott's scientific work, his understanding of human development, and his practice as a psychotherapist, as we will now see.

The Possibility of Knowing

The notion of "possibility" (and its close relation "potentiality")³ is at the heart of Winnicott's theoretical elaboration. In his theoretical work,

³ Possibility and potentiality are related concepts, but they can of course also be distinguished. To offer one tentative way of drawing this distinction, to describe something as having "potential," points toward a particular kind of "possibility": that something not yet actual will, or may, become so in the future. An athletic child who is not yet a professional sprinter shows to an observer the potential to become one but may instead become a footballer or perhaps a banker. What they do in fact become is a question of what is made of that potential. Perhaps, with the help of the one who observes it, the potential transforms or evolves or develops or undergoes some process of conrescence through which – *in time* – it becomes an actuality. Not all possibility is of this "potential" kind. For example, when asked by a hungry friend, a person says that it is possible that there is cheese in the refrigerator, but she is not sure. Whether it turns out true or not does not depend on any transformation or evolution or development – *in time* – of the cheese. The cheese is either there or not, and the question of its "possibility" refers only to a lack of certainty on the part of the fridge owner. Winnicott is a thinker both of potentiality and of possibility. One might say that he investigates the potentiality that gives rise to the capacity for the kind of possibility at play in the question: "is there cheese in the fridge?"

Winnicott was both influenced by the pattern proposed by Freudian thought, while also modifying it – patterning it – and *making it his own*.

In his scientific and clinical research, Winnicott was deeply pragmatist in his approach; he would "try" a (Freudian-Kleinian) psychoanalytically inspired interpretation with the parents of a sick child, accepting it as a good enough theory if it worked, but changing it if it failed to account for the reality of infants in their environment (Winnicott 1967a; Zittoun 2015). He made this method of a psychoanalytical search for truth very explicit in a comment from 1942 which shows that he saw his own work as the pursuit of the expansion of the possible, an expansion that is reachable both through scientific investigation and therapeutic work:

Thus search for truth is a cycle of three phases: piecemeal objective observation; construction and testing of theory based on observed facts; and imaginative reaching out in front of accredited theory towards the invention of new instruments of precision, these opening up new fields for objective observation. (Winnicott 1942b, p. 146)

Human Development and the Possible

Human development is far from a relatively simple matter of the biological maturation of self-contained organisms, since it also entails cultural inheritance and the development and mastery of the complex forms of symbolism – and the advanced psychological functions these enable – that mediate all human culture and society. Through his texts, Winnicott expresses a belief in infants' and adults' capacity to develop and grow, and to find ways for growth even in the face of deprivation. "In terms of development it can be said that health means maturity according to the maturity that belongs to the age of the individual (...) The tendency toward maturation is part of that which is inherited" (Winnicott 1967b, p. 66).

However, as Winnicott famously said, there is no such thing as an infant (Winnicott 1960, pp. 587, n4); there is always a child and a mother, a family, a house, a neighborhood – an environment. Hence, development itself needs both this tendency toward maturation, and the forms of

originality (including imagination and symbol use) gradually cultivated within and provided by a “good-enough environmental provision” (Winnicott 1967b, p. 66). This good-enough environment is usually expected to begin within the mother-child (or carer-child) interaction, but it is also something that – all going well – continues to be shared throughout life. In infancy, it is thanks to the availability of the mother (or carer), their handling of the baby, and their capacity to hold it and play with it, that the child can make the experience of feeling sufficiently supported to entertain, explore, and expand its psychosocial possibilities (Winnicott 1967b, p. 77).

More specifically, Winnicott describes the initial process by which the young infant, who is at first incapable of living without a carer, progressively becomes separated from them. Viewed psychologically from the perspective of the infant, this is also a matter of coming to realize that one’s care-giver exists as an entity in some way separable from one’s own being, and indeed that there is a surrounding world of objects beyond one’s immediate needs:

From a start of being merged with the mother the baby is at a stage of separating out the mother from the self, and the mother is lowering the degree of her adaptation to the baby’s needs (both because of her own recovery from a high degree of identification with her baby and because of her perception of the baby’s new need, the need for her to be a separate phenomenon). (Winnicott 1968, p. 224)

This notion of a “merged” mother and baby gets us some way toward understanding what it might mean to speak of a location that is neither subjectively “inside” nor objectively “outside,” but rather *between*. From out of this merger, as it were, the potential space between carer and infant must afford the conditions for the emergence of something like an “individual,” a process of individuation that yields for the infant a sense of a self relatively distinct from others and from its environment. In Winnicott’s description, during the initial merged state the mother adapts herself to the baby’s needs, feeding when hungry, changing when soiled, soothing when in distress, and so on. Taking the infant’s perspective, this creates an almost magical experience of satisfaction that

Winnicott calls “omnipotence.” But seen from another perspective, this magical omnipotence is a carefully contrived illusion that is made possible by the mother’s caring attention whereby she provides what is needed just as it is wanted. It is the mother, who of course is already an individual with a self, who creates this magic by mediating the illusion in which desire is met. But, as the baby’s needs and capacities change with gradual development, so the mother lowers the “degree of her adaptation,” an adjustment which affords the infant a degree of disillusionment. But this disillusionment is not simply negative from the infant’s perspective, because it invites them to a growing sense of an external world, and along with that, a growing sense of being a self within that world. In other words, the disillusionment affords encounters with a world that need not only meet one’s desires, but that can also frustrate, disappoint, and be grappled with and learned about.

It is here that Winnicott gives a distinctive meaning to “play.” For the process of disillusionment to be a positive and not a traumatic experience, the mother and infant *play* with the relationship between illusion and disillusion. The place of play is thus neither “inside” (it is not a subjective illusion under the spell of complete magical control) nor “outside” in the repudiated world that has been recognized as “not me” (because it is beyond magical control). What the play between mother and infant plays with is precisely the play between illusion and disillusion, inner and outer, doing and being done to, and omnipotence and dependence, and this play unfolds in a safe-space in which these paradoxes remain unchallenged and happily tolerated. The situation in which the mother mediates the “illusion” of the merged state gives way to a situation in which the two are both merged and not merged, and it is at this point of development that one tends to see a new form of mediation crystallize into the form of what Winnicott calls a “transitional object”: the infant’s *first “not me” possession*, their first *symbol*, and a *plaything* whose importance will continue to linger as they grow.

Since transitional objects are precisely indeterminate as to their inner/outer, me/not me nature, they tend to have features which afford

this ambiguity: a corner of a blanket or a rag doll that – along with the thumb – might be in the mouth and then out of the mouth, for instance. This feature affords the *potential* for the transition object to appear to the infant one moment as a part of “me” and the next as an external object, perhaps under my control, but also existing without me. For the same reason, being a perceptible object which remains despite these shifts, the materiality of the transition object can also serve as a primitive *symbol* as it comes in this way to acquire and carry a basic *meaning* (associated with a sense of importance) for the infant. The transition object thus comes to carry the meaning of a thing that “speaks” of a me and a not me, or of a thumb that remains even if it is no longer being sucked, and also perhaps of a mother no longer here, but who will nevertheless return. As the child grows, transition objects can continue to be important, as when Winnicott writes of 2-year-old Edmund playing with a piece of string during a consultation with his mother, and using the string as a plaything to manage his need for her in a way that symbolized both “separateness and union through communication” (p.43). The string – being something that “both *joined and separated*” (Winnicott 1991, p. 108, emphasis original)⁴ – served as a plaything

precisely because it so effectively symbolized *for* the child a predicament that can in this way be playfully *handled*.

Winnicott thus considered that many possible things or objects could be used in this potential zone, as transitional objects – a thumb, a blanket or a teddy bear, or even a sound; each child may thus use any object in this function of being in between, me not me, and created yet found. At some point of her development, the child can start to live with this experience of being separated from the carer, and the object that symbolizes the junction may become less important – perhaps only used some sad evenings to fall asleep. Eventually, the corner of blanket or the teddy bear will become just a mere blanket – deattached, it will fall back into the “limbo of half-forgotten things” (Winnicott 1959, p. 526). Yet when this happens, the child has in some ways internalized the symbolic and playing function and can reactivate it in many other, less vital situations, along his development and socialization – in playing and games, joking, and reading. It later will be part of one’s capacity to daydream and dream, of one’s daily creative capacity – the ability to see the same tree every time anew – and adult cultural experiences:

Put rather crudely: we go to a concert and I hear a late Beethoven string quartet (you see I’m high-brow). This quartet is not just an external fact produced by Beethoven and played by the musicians; and it is not my dream, which as a matter of fact would not have been so good. The experience, coupled with my preparation of myself for it, enables me to create a glorious fact. I enjoy it because I say I created it, I hallucinated it, and it is real and would have been there even if I had been

⁴The famous paper on transitional phenomena and transitional objects makes no mention of the concept of potential space, but this concept is elaborated in other parts of *Playing and reality*, especially Chapter 7 on *The location of cultural experiences*. The concept of potential space is a development and refinement of the concept of the “intermediate area of experiencing” (sometimes “third space”) discussed above as the place for transitional phenomena. In other words, it is a paradoxical “area” which exists “between” subjectivity and objective perception, and hence an area in which no clear distinction is drawn between what is really “out there” and what is merely “in here.” The main thesis of this chapter, elaborated on page 135, is divided into five points. First, that playing is the initial manifestation of cultural experience of all kinds, and that it happens in the “*potential space* between the individual and the environment (originally the object).” Second, how a given individual *uses* this potential space will depend upon early life experiences. Third, that experiences within the potential space tend to be “maximally intense” since they concern the interplay between an omnipotent sense of there being “nothing but me” and the realization

that objects exist “beyond” me. Fourth, that the quality of these experiences are contingent upon a *feeling of confidence* that comes from the dependability of the caregiver on whom the infant depends (and who more or less tolerates the potential space as a place for play). And finally, that therefore any study of the play or of the cultural life of an individual requires insight into the fate of a potential space that will be in some sense “sacred” for them. Through these means, Winnicott shows how his theory of transitional phenomena is connected to an account of the origins of cultural experience in play – play in turn being an experience of transition that is rooted within experiences of transition

neither conceived of nor conceived. (Winnicott 1959, p. 527)⁵

Hence, Winnicott's potential space is the condition of the possible in multiple senses. It is potential, not only because it enables the child to develop as an independent being, but also because it is the beginning of the zone, or area, or types of experience from which symbolizing, playing, and cultural experience will emerge. For Winnicott, then, the meaning of "potentiality" (afforded by means of the transitional phenomena) is this *journey toward experiencing*.

This "intermediate area of experiencing" that is the *potential space* serves for Winnicott as the source of creative living as such, and the sphere from which religion, philosophy, and the arts spring and are continually replenished (Stenner *In preparation*; Zittoun 2013).

On Making the Potential, Possible

Winnicott's optimism and fundamental belief in the potential for development combines with his practical endeavors to construct – by means of psychotherapy – new spaces of potentiality which can serve to supplement and support those whose capacity to play within a third space has been compromised or hindered (either by lack of adequate prior experience or challenges from life events). In his work, he explored many "technical" ways by which the possible can be

potentialized.⁶ Winnicott indeed believed that even people who did not have the safe experience of a good-enough environment – because of the lack or inadequacy of the carer, often due to causes difficult to master – and therefore, who were not able to experience potentiality or play, could be given another chance to develop them. Interestingly, Winnicott saw institutions, healthy relationships, and the therapeutic space, as offering such a sense of the possible when carefully managed. We offer three short examples, involving infants, adolescents, and adults respectively.

First, in his early work, Winnicott shared many observations of various carer/child interactions that were made at his consultation reception at the children's hospital. A series of very short vignettes describe Winnicott's observations of mothers and young infants entering the room, sitting opposite him, and reacting toward a spatula left on the table (Winnicott 1941b, 1942a). Usually, the mother lets the child explore more or less trustfully; he or she typically first hesitates and holds back despite signs of temptation, looking to the adults for approval, before eventually daring to let their desire guide their action, and so, after salivating, putting the spatula in their mouths; and then, playing with it, throwing it on the floor, or banging it, until they become interested in something else. Around this small scene, Winnicott observes many variations in children's exploration and trust; and children coming with various ailments – asthma, anxiety, or others – very often see their symptoms disappear after a few sessions, in which, if not the parent, then Winnicott himself holds the child on his lap and tolerates all the hesitations, fears, excitement, aggressivity, and inner-conflicts of this small baby exploring his or her desire to play with the spatula (Winnicott 1941b). What he here does, in a few sessions, is restore the basic sense of trust of the child in their environment by supporting their exploration and enjoyment of the world. In these early papers, Winnicott has not yet named potential

⁵ Thus, cultural experiences – experiences of pieces or arts, religious experiences – emerge out of several features of transitional experiences, such as: the deathection of an the initial transitional object (not fetish); the extension of the symbolic function to many objects which with can be played; the development of the symbolic function itself; the ability to use objects, and to fantasize, and; the ability to relax, and let oneself go on an unintegrated state. These must then be linked to, and converge with: the complication of the cognitive abilities of the person; the complexity of the socialization of the person; (the entering in highly structured social areas), and; the complication and diversification of the emotional experiences. All these things become combined and infinitely declined, according to one's interest, and become the reality of human cultural experiencing

⁶ In this respect, Winnicott can be considered an important innovator of what Niels Akerstrøm Andersen has called "potentialization technologies" (Åkerstrøm Andersen and Stenner 2019)

phenomena, but he has already identified the conditions of possibility of their emergence, and the profound importance of play. In effect, in this early work, Winnicott creates the relational conditions for the infant to be able to use objects in a potential zone, and play with them – even if this can be lost and may need to be reconquered again.

Second, Winnicott was brought to work in Q Camps, a residential facility for young delinquents during World War II (Reeves 2017; Winnicott 1941a, 1943) as well as hostels for homeless children (Winnicott and Britton 1944). This brought him to reflect on the therapeutic role of the environment in supporting the delinquent or homeless child's otherwise interrupted development. His basic idea was at that time, as we have seen, that a good enough home gives the child the basic security and trust that he or she needs to develop; that home also welcomes the child's exploration, and contains and absorbs the child's developing needs, including to attack and destroy. During the war, children separated from their homes, sometimes for long periods, could adjust to further environments depending on this; "if the parents are proved to be trustworthy, the child has every reason to believe that other people may be the same, so that he can face life in an optimistic way" (Winnicott and Britton 1944, p. 305). In contrast, a child becomes delinquent, because the home – for whatever reason – failed to contain or absorb the child's necessary anger or destructiveness; consequently, "the child has to seek and test the ability of the structure of society" (Winnicott 1943, p. 198). In other words, "according to this view the delinquent's anti-social acts are (like so many symptoms in psychology) a symptom of hope, representative of the forward emotional relationship which the child is trying to hold" (Winnicott 1943, p. 198). Hence, even – or perhaps especially – deprived children manifest their need to find a better environment. Consequently, Winnicott conceives of institutions such as hostels for homeless children, of which there were so many during the war, or for delinquents, as a "substitute home"; "each hostel tries to reproduce as nearly as possible a home environment for each child in it" (Winnicott and Britton 1944, p. 305). This is made possible,

first, by a careful distribution of role between psychiatrist, psychiatric social workers, and hostel staff. Second, concretely, a frame is provided offering not only shelter, clothes, regular meals, and schooling, but also "apparatus and ideas leading to rich play and constructive work" (Winnicott and Britton 1944, p. 305). Third, within this space, the children will test the hostel staff, or bring other children to test them; they may destroy things, or attack staff members, or create disputes between staff. This is where the staff play a key role, in welcoming yet resisting the attacks, without sentimentality, knowing that it is part of the process of development of the child (Winnicott and Britton 1944, p. 306).⁷ Winnicott concludes his report on what he sees as the "war-time experiment" by saying that "it has surely established the fact that in the treatment of children suffering from emotional disturbances, residence in hostels under special management can have definite therapeutic practice" (Winnicott and Britton 1944, p. 311). In the light of his later work, we may say that Winnicott created the frame within which a child was in good enough conditions to be able to play, while exploring the limits of relationships and his inner world, that is, preserving the very conditions of a potential space.

Third, much later and in his practice as an analyst with adults, Winnicott paid careful attention to people's ability to play. Play has great importance for him, because to genuinely play is to create and enter a potential space. Psychotherapy itself "has to do with two people playing together" (Winnicott 1991, p. 51). Psychotherapy can therefore be envisaged as enabling a zone of overlap between the play of the analyst and that of the analysand.⁸ Conversely, the absence of play is the absence of potentiality. Therefore, if play is not possible for an analysand, then the aim of

⁷ Winnicott also proposes to sort children in various hostels according to their needs, whether or not they have had a former experience of a good home, or whether or not they manifest antisocial conduct, together with staff most likely to handle these types of children

⁸ From this perspective, not only does the therapist err if they can only understand such playfulness as infantile regression, but they also miss an essential element for a creative relation to the world

therapy is to occasion an environment in which play becomes a possibility. Winnicott thus reports the case of a woman who does not play – a case presented in the second chapter of *Playing and reality* (Winnicott 2001). Rather than playing, this woman appears as someone who engages in a form of dissociated fantasizing, a private and inaccessible form of daydreaming:

For instance, the patient is in my room having her treatment and a little bit of the sky is available for her to look at. It is evening. She says: "I am up on those pink clouds where I can walk". (...) The patient may sit in her room and while doing nothing at all except breathe she has (in her fantasy) painted a picture, or she has done an interesting piece of work in her job, or she has been for a country walk; but from the observer's point of view nothing whatever has happened. (Winnicott 2001, p. 27)

For Winnicott, this is *not* dreaming or imagining, because it is both only in the mind of the person, and also just in some part not connected to her wider life. What Winnicott calls "fantasizing" can easily be mistaken for the playing or dreaming that happens in the potential space, but it is dreaming that precisely does not put the inner and outer or the self and the other "at play" together. In this sense, the one fantasizing is dissociated: Unlike play or dream, the fantasizing is about nothing and has no consequence. Play has frozen stiff and – as if morphing into a parody of itself – become "locked in the fixity" of fantasizing (p. 42) and dissociated from the living core of the potential space (p. 43). For Winnicott, these dissociations are an important clue explaining why the patient cannot realize her potential: Why she fails her friends and is not using her great artistic capacities, and why she complains that she has always "missed the boat" in her life, as if life were paralyzed and forever stuck in condition of unrealized potential. Winnicott finds an important source of this situation in the woman's childhood as the youngest of many siblings, when she recalls being invited to play in games already set for her, unable to introduce her own innovations into the existing pattern of family tradition. As a result, she was only partly playing, giving those around her the impression she was not really taking part, and giving herself the experience of observing herself as if from the outside. This form of observation then developed into fully fledged

fantasizing, which, far from *connecting* her to the demands of her actual life, served to interfere with any play between dream and practical existence. In short, her fantasizing was not taking place in the transitional or potential area; it was in some part of her mind only.

Winnicott describes a long therapeutic process, in which he offers very long and flexible sessions to the patient, welcoming any material, and reflecting on the distinction between fantasizing and dreaming; at some point, the patient falls asleep in the session and, in the space offered by Winnicott, progressively discovers her own dreaming and how it differs from fantasizing:

The *fantasy* had to do with people coming and taking over her flat. That is all. The *dream* that people came and took over her flat would have to do with her finding new possibilities in her personality and also with the enjoyment of identifications with other people, including her parents (...) [Given the patient's interest for poetry] I said that fantasizing was about a certain subject and was a dead end. *It had no poetic value*. The corresponding dream, however, *had poetry in it*, that is to say, layer upon layer of meaning related to past, present and future, and to inner and outer, and always fundamentally about herself. (Winnicott 2001, p. 35)

Hence, for Winnicott, dreaming, as playing, is something relational and fluid that involves the whole of the person; it is symbolic, in the sense of connecting inner life and outer life, past, present, and future; it is full of potential, in the sense that it opens new possibilities for one's own life, and relationships to others. A dream or playful activity or artwork is, for Winnicott, something that *has poetry in it*, and this means nothing more than that it puts one in contact with the potential space that is the "living core of the personality" (p.43). This case is thus that of someone who lacked access to potential phenomena, and so could not create new possibilities for her life. Winnicott's intervention is aimed at restoring the capacity to engage with the phenomena of potentiality by offering the patient a secure and holding space, welcoming her externalizations, and creating a zone where these could be shared, and played with together in a manner that opened up transitional possibilities.

In any case, Winnicott seemed to be an expert in creating the supportive environments that allow

people to engage in potential spaces, and thus to use objects and create with them – a spatula, a toy, or a dream; he was an expert in making the potential possible, and with it, restoring the possibility of the possible.

Summary

With examples drawn from practice with children, adolescents, and adults, we have briefly described three ways in which Winnicott's practice concerned the technical problem of how to create environments which render possibility more possible. These practices were informed by Winnicott's distinctive psychoanalytical theorizing, at the heart of which were the transitional phenomena which we have shown to be phenomena for and about potentialization. Potentialization phenomena are related to an area/time of experiencing which is located between inner psychic life and social reality and between self and other, and which permit a degree of play between these possibilities and actualities. Potential phenomena mark the beginning of symbolism in the play between infant and carer as the self first emerges and develops, but they evolve via more elaborate child's play into the cultural experiencing and creativity that can continue throughout adulthood. The vital core of the human personality is something that is not personal at all, but which allows the person to continually become what they are and what they might be.

Cross-References

- Creativity
- Daydreaming
- Dreams
- Emotion

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Possible in Anthropology

Sarah Grosso

Webster University Geneva, Geneva, Switzerland

Abstract

Anthropology is the study of people: how they behave, socialize, communicate, and understand the world. Etymologically, the word combines the Greek terms *anthropos* (“human”) and *logos* (“thought” or “reason”) (Britannica), literally meaning the study of humankind. Often confused with archaeology, which studies human society in the past (and is considered a branch of anthropology in the USA), anthropologists are interested in contemporary human society and culture.

The distinct anthropological approach to the study of people is ripe with possibilities; by helping us see the familiar in the strange, and the strange in the familiar, anthropology furthers our understanding of ourselves and of others.

This perspective is made possible by the ethnographic method that distinguishes anthropology from other social science disciplines. In contrast with psychologists who focus on individuals and their character and behavior and sociologists who examine

broader social systems, anthropologists are interested in the interactions between smaller groups of people. These interactions are studied via extensive fieldwork that involves spending long periods of time in intimate contact with the people under study.

By seeking an in-depth understanding of what it means to be human, anthropology contributes to cross-cultural understanding, provides inspiration for social change, and helps build empathy across cultural divides.

Keywords

Anthropology · Social science · Culture · Possible · Empathy · Ethnography · Qualitative research

Introduction

This entry will start by defining anthropology and the ethnographic method with which it is closely associated. It will then explore what this approach to studying humankind makes possible via a case study drawing on anthropological work on gender and, more specifically, women’s rights. Finally, it will consider the broader contribution of anthropology as an academic discipline, more specifically its potential to provide inspiration for social change, boost cross-cultural communication, and build empathy across cultural divides.

Seeing Like an Anthropologist: The Possibility of Exchange

Anthropology emerged as an academic discipline at the turn of the twentieth century. In the British tradition, social anthropology is often associated with Bronislaw Malinowski, considered the founding father of British social anthropology. Malinowski, a Polish anthropologist, was instrumental in training the next generation of scholars and in developing the ethnographic fieldwork method with which anthropology is associated. Franz Boas played a similar role in the USA shaping the tradition of cultural anthropology (Engelke, pp. 22–23).

The goal of anthropology is to gain an in-depth understanding of what it means to be human. It seeks to grasp both cultural variation and universality: understanding how people from different cultures might see the world differently, as well as what it is that makes us all uniquely human. It is often said that, in the process, anthropology makes the familiar strange, while making the strange familiar.

By challenging assumptions and revealing alternatives, anthropology provides a “profoundly useful way of thinking about the modern world” (Engelke 2017, p. 25). For some activist anthropologists like Graeber, anthropology is also consciously a source of inspiration for social change, and his scholarship is underlined by a “commitment to the idea that the world could possibly look very different than it does” (Graeber 2007, p. 2). In short, anthropology teaches us that it is possible for life to be different.

Consequently, one way in which anthropology is connected with the possible is by challenging unchallenged assumptions and enabling us to see the world from other cultural perspectives. By reading anthropological research, we can learn about other possible ways of being and living. As we learn about other cultures and their values, our own values rarely remain unshaken. At the heart of the anthropological project is, therefore, the “search for new perspectives that open up new possibilities” (Chapter “Inspiration” by Glaveanu, this volume).

Comparison and exchange are key to the development of anthropological knowledge, which is built on a process of exchange between the anthropologist and the culture under study. During fieldwork, anthropologists do not assume that their own concepts and understandings are universal or self-evident. Rather, they question what art, religion, law, or kinship mean from “the native’s point of view” (Engelke 2017, p. 15).

This approach has led to accusations that anthropologists are moral relativists and that they unquestioningly accept problematic elements of other cultures, including extreme instances of violence and discrimination. Anthropologists use relativism as a method, rather than a moral stance, in order to study and comprehend another culture in its own terms. This involves comparing

cultures with the intention of seeing the world from another perspective, rather than judging one culture in relation to another.

This approach allows anthropologists to explore topics, including those which could be seen as morally objectionable. An example of this is the anthropological work that has been done to better understand phenomena such as ethnic or nationalist violence, genocide, torture, and extremist politics (Daniel 1996; Hinton 2002; Kelly 2012; Thorleifsson 2018). This work may also seek to understand the phenomenon from the perspective of the perpetrator of violence, as well as the victim. Crucially, as Engelke has stated: “cultural relativism does not require you to accept everything that other people do that you might otherwise find unjust or wrong” (Engelke 2017, p. 17). Seeing like an anthropologist in this way – by understanding, but not necessarily adopting, alternative points of view – facilitates cross-cultural exchange and dialogue, while challenging our own assumptions and opening us up to new possibilities.

Exchange between anthropologists has also been important for the discipline. While anthropology developed as an academic discipline in the UK and in the USA in the early twentieth century, influential traditions have also emerged in countries from Brazil to Australia (Engelke 2017, p. 30). Numerous subfields have also developed providing the possibility of exchange between anthropology and the law or anthropology and economics, to name but two examples. Anthropological insights have also been harnessed outside academia. While many anthropologists work in academia, others follow careers in “applied anthropology” bringing an anthropological perspective to bear in a variety of sectors from NGOs to the military.

Seeing Like an Anthropologist: The Possibility of New Perspectives

It is the ethnographic approach that enables anthropologists to gain insight into everyday practices that best defines anthropology. Ethnography, which literally means *writing culture*, combines the activity of engaging in intimate fieldwork

with the task of producing a written account of a particular culture based on this research. Anthropologists often spend a year or more carrying out fieldwork. During this time, they observe and interact with people in their own language. Afterward, anthropologists write an ethnography documenting what they have learned based on these observations and experiences. For anthropologists, therefore, there is a particularly close link between research and writing.

This in-depth, bottom-up form of qualitative research is holistic in nature and enables the anthropologist to break down commonly held assumptions and trace connections between spheres of life that are often perceived as being separate. For instance, anthropologists have stressed the close links between economics and kinship, as well as the need to understand economic class in relation to gender, race, and sexuality (Bear et al.). In their *Feminist Manifesto for the Study of Capitalism*, Bear et al. argue that in order to understand capitalism, we need to grapple with the “full range of productive powers and practices through which people constitute diverse livelihoods As they seek to realize the potentialities of resources, money, labour and investment” (Bear et al.). This entails analyzing what happens in the household and within kin relations as being integral to, rather than separate from, the markets. Through this lens, the production of capital equally depends on unpaid, intimate forms of labor such as caring for children or the elderly, forms of labor that are all-too-often gendered. By seeking connections, all aspects of daily life are seen as interrelated, rather than separated into independent fields of study such as economics or kinship.

Although often associated with the study of remote, tribal cultures, these methods are just as relevant to the study of contemporary phenomena, like the latest technologies or the global financial crisis. Contemporary anthropologists are as (or more) likely to be found studying how people experience austerity measures or the impact of social media on peoples’ lives (Bear 2015; Miller et al. 2016). This work highlights how the impact of these policies or technologies

differs for people in different places and groups and can, subsequently, provide valuable insights that can inform future policy reform. Working with a team of researchers exploring social media use in nine different countries, Miller highlights how people use and understand social media differently in different contexts. This allowed him to break down commonly held assumptions such as the idea that social media necessarily makes us more individualistic; social media users play an active role in shaping those meanings, and the impact technology has on their lives (Miller et al. 2016).

We live in an increasingly interconnected world and anthropologists acknowledge that their field sites have been shaken by globalization and are rarely bounded or culturally homogenous (Appadurai 1996). Consequently, while some anthropologists may continue to study tribal and indigenous cultures, they do not perceive these cultures as being separate from the broader global social, political, and economic movements. Today, anthropologists study sites such as refugee camps or courts and increasingly conduct fieldwork across multiple sites (Barbosa 2013; Grosso 2013).

Globalization has also demanded innovation. In her study of capitalism, Anna Tsing explores the global trade in matsutake mushrooms. Rather than being based in a specific location, she followed the mushrooms conducting research with “Japanese gourmets, capitalist traders, Hmong jungle fighters, Finnish nature guides,” scientists and many more actors who could help her understand the global trade in the world’s most valuable mushroom (Tsing 2015). Fieldwork was a collaboration between Tsing and six other anthropologists and took place in the USA, Japan, Canada, China, and Finland. Rather than studying a particular site in isolation, the intention was to trace the connections between this site and others.

Seeing Like an Anthropologist: The Possibility of Change

By studying how things are done in and within different cultures and across time, anthropology

helps break down the notion that certain ideas and concepts are “natural” and immutable; things have been and can be done differently.

Anthropological work on the state helps elucidate this idea. States play a crucial role in our lives; they grant us access to citizenship rights such as healthcare and education. In some instances, states can protect us from harm such as when we call on the services of the police if we are victim of a crime. In other instances, states may incarcerate us if we have perpetrated a crime. Despite this crucial role played by states, most people do not usually question the existence of the state or who or what gives it this power over our lives.

Anthropologists studying the state have:

allowed us to pay careful attention to the cultural constitution of the state: how people perceive the state, how their understandings are shaped by their particular locations and intimate and embodied encounters with state processes and officials, and how the state manifests itself in their lives. (Sharma and Gupta 2006, p. 11)

They have observed and documented the everyday practices through which the state becomes “real” such as interactions with state agents like police officers and court clerks. Anthropologists have approached other institutions the existence of which we take for granted, such as the law or the economy, in a similar way (Bear et al. 2015; Grosso 2013).

The way contemporary anthropologists understand culture is central to this approach. Rather than viewing culture as bounded and static, culture is understood as hybrid, dynamic, and ever changing (Merry 2003). This nuanced concept of culture takes into account the active role people play in constantly reproducing culture in everyday life. First, it means that it can be studied by observing the everyday practices and interactions mentioned above. Second, it also entails the possibility of change; culture is constantly being reconstructed and can, therefore, be reconstructed in different ways. This potential for change is inherent in the following case study that examines how anthropologists have contributed to work on gender and, in particular, on women’s rights.

Anthropology: The Possible and Women’s Rights

Engendering Possibility

Anthropological work on gender and women’s rights provides vivid examples of the power inherent in breaking down common assumptions and opening up alternative ways of living. It also shows the possibilities for change inherent in this model of understanding the world.

Rather than seeing gender as natural, biological, and immutable, in part, inspired by feminist philosophers like Simone de Beauvoir and Judith Butler, anthropologists have stressed the culturally constructed nature of gender. As Moore writes, “the obvious fact of biological differences between women and men tells us nothing about the general significance of those differences” (Moore 1994).

Anthropologists have helped document the ways in which the meaning of gender varies across cultures and historical periods. The anthropological lens has also revealed ways in which women may have power in practice, although they may not be *perceived* to hold power (Herzfeld 1985, Blackwood). Blackwood’s study of an Indonesian village traced the ways in which women did hold authority, despite official representations and discourses suggesting they did not. Although women were predominantly associated with their roles as wives and mothers, women played a significant role in the economy and within the village and were to be respected as sources of wisdom by young women and men alike (Blackwood 1995).

The perception that women hold less power than men is often based on the private/public divide; women are associated with domestic roles in the private realm of the home, whereas men are associated with public roles in spheres such as the economy and politics. Anthropologists have helped to break down the perceived separation between public and private spheres, tracing the multiple connections that link the family, the neighborhood, and the nation. Studies of women’s political activism in Iraq and Egypt have found that informal, interpersonal networks such as

grassroots women's groups can be powerful sources of political participation, questioning the assumption that political participation must take place in formal organizations or parliaments (Al Ali and Pratt 2009; Singerman 1995). This reveals possibilities for action and empowerment for both women and men.

The apparent universality of patriarchal systems breaks down in the face of varied, alternate models of gender and kinship that anthropology has documented, opening up the possibility that there are alternative ways to organize society and gender relations than the patriarchal model that dominates in the West. On this basis, anthropologists have argued that there is nothing natural or predetermined about the subordination of women (Engelke 2017, p. 217). Such a definition of gender is central to feminist projects that seek solutions for injustice and discrimination on the basis of gender; if gender is not fixed, it can change, and this allows for the possibility of resisting gender inequalities where they occur.

Anthropology: The Possible and Women's Rights

Drawing on this concept of culture and of gender, anthropologists have contributed to the study of women's human rights by analyzing how people perceive and experience those rights in practice. They have stressed that gender is central to how an individual experiences the law and is able to gain access to their rights and to justice.

Merry and Coutin's research on women's rights demonstrates the kind of insight that an anthropological approach can bring to issues such as gender-based violence. While discussing the UN's attempts to develop statistical indicators to monitor the extent of violence against women around the world, Merry and Coutin argue that valuable aspects were lost, notably those that are best captured by an anthropological approach:

the complexity of women's relationships, their histories, the interplay of love and fear, and the role of kinship and residence patterns. (Merry and Coutin 2013, p. 5)

Statistics also fail to grasp "the extent to which women's everyday lives and experiences are affected by the possibility and the practice of

violence" (Merry and Coutin, p. 8), anthropology provides the opportunity to capture elements of the human experience that are crucial to our understanding, but difficult to quantify or measure.

Anthropologists can help provide the context for understanding complex social phenomena like gender-based violence. They can also help advance our understanding of the efficacy – or inefficacy – of potential solutions. To Merry and Coutin: "violence against women must be viewed in the context of a range of relationships, events over time, and meanings of masculinity and femininity, intertwined with ideas of race, class, region, and so on" (Merry and Coutin 2013, p. 5). These same factors shape the possibility of survivors of violence finding justice: whether (or not) they will have the courage to appeal to the police or a court, how they will be treated if they do, and how they will experience and navigate the court system to, potentially, find justice (Merry and Coutin 2013; Grosso 2013). Anthropologists have, therefore, helped break down the misnomer that "culture" is somehow separate from the law, demonstrating that the law and culture are not only connected, but that culture plays a central role in the development of and the operation of the law and its ability to bring justice.

Summary: Another World Is Possible

Anthropology can be viewed as a social science that aims to explore and document possible ways of imagining and constructing human life and relationships. In this way, anthropology is all about the possible: breaking down deeply held assumptions and commonly held beliefs, seeking inspiration in culturally diverse ways of doing, and thinking and opening up the mind to previously undiscovered or unrealized possibilities. In the words of anthropologist, David Graeber, anthropology:

opens windows on other possible forms of human social existence Human possibilities are in almost every way greater than we ordinarily imagine ... Anthropology also affords us new possible perspectives on familiar problems. (2007, p. 1)

Anthropology achieves this in different ways. It does this by introducing the possibility of contesting and changing categories (such as gender) by revealing them to be historically and culturally produced, rather than natural (Merry and Coutin 2013, p. 8). This has enabled anthropologists to engage with public issues, in order to counter grand narratives such as the “‘clash of civilizations’ . . . grapple with risky popular misconceptions of culture, difference and suffering and . . . surface less visible forms of compassion, care, and solidarity” (Haugerud 2016, p. 585).

It also does this by raising awareness of alternative perspectives; by attending to the micro level of interpersonal human relationships, anthropology reveals aspects of life that are usually hidden in plain sight. In the process, anthropology also serves to foster empathy and compassion, a cornerstone of which is understanding another person’s perspective (Goleman 2017, p. 4). Consequently, anthropology can also be a driver for such change by contributing to cross-cultural communication and helping build empathy across cultural divides.

Cross-References

- Empathy
- Feminisms
- Inspiration
- Possible in Sociology
- Social Change
- Sociological Imagination

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Possible in Economics

Béatrice Boulu-Reshef

University of Orléans, Laboratoire d'Economie
d'Orléans, Orléans, France

Abstract

The notion of *possible* has two meaning; first, it denotes the ability to be achieved, second, it denotes the fact that an event or a fact is not certain. Although the notion of *possible* in economics is not literally used in economics, its meaning is absolutely ubiquitous in that the *possible* is an inherent part of the scientific enterprise in economics. The prevalent use of the words the “achievable,” “realization,” “feasibility” for the former meaning and of the “likelihood,” the “probability,” or the “potentiality” for the latter attests of the importance of the *possible* in economics. Inherently, economics tries to predict *possible* states and the evolution of the economy given the variables that it uses. The *possible* is constitutive of the *episteme* of economics as it is central in its main objects of research, that are “value” and “resource allocation,” and in its models and in its empirical methodologies. The *possible* also plays an important role in its three of its core concepts, namely, production, consumption, and trade. The usage of the *possible* in economics is prominent in the dialogue that is installed between theoretical and empirical research, in the studying of the robustness of economic institutions, and the implications of economics type of thinking. In theoretical works, the *possible* is mainly used in the sense of what is *achievable* or *feasible* given the available resources. In empirical works, the use of the *possible* is centered around the search of the explanations that are more *likely* or more *probable*.

Keywords

Possible · Economics · Achievable · Feasible · Likelihood · Episteme · Model · Empirical methodology

Introduction

Etymologically, the notion of *possible* comes from the Latin *possibilis*, which means “that can be done,” which is directly related to the Latin *posse* which means “have power, be able.” The notion of *possible* is also related to the Latin *potentem* (with the nominative *potens*), which means “powerful” and *potis*, which means “powerful, able, capable; possible” and when referring to a person “better, preferable; chief, principal; strongest, foremost.” The proto-Indo-European root *poti-* used in words such as potent, omnipotent, power, or potential, to cite a few, refers to the same idea of “having power,” or being “powerful, able, capable.”

These roots are present in the contemporary views of “possible” that are centered on the ideas that something is *possible* means that is “achievable” and/or “not certain.” Thus, being *possible* has two meanings. First, something is *possible* if it is achievable, i.e., “it can be done or achieved.” In lay conversations, one would use the notion of *possible* to describe conditions that are hoped to be attained, e.g., as in “if possible I would like to get there before noon.” Second, something is *possible* if it is not certain, i.e., “it is conceivable, feasible, plausible, imaginable, thinkable,” and so on. In lay conversations, one would use the notion of *possible* to describe conditions or events that might or might not happen, e.g., as in “that’s the *possible* solution to the problem.”

In economics, the use of the word *possible* is secondary in nature, as often veiled by other, often more sophisticated notions. Yet, although it is not always referred as such, the notion of *possible* is practically ubiquitous in economics. Thus, despite its relative semantic absence, the notion of *possible* in economics unfolds in numerous and important topics of research. This entry will attempt to shed some light on the important accptions of the notion of *possible* in economics.

First, the role of the *possible* in the *episteme* of economics is presented. Light is shed on the importance of the *possible* in the objects of research of economics, on the role of the *possible*

in economic models, and finally on its role in economics methodology. Second, the importance of the *possible* in three of its core notions, i.e., production, consumption, and trade is reported. Last, three usages of the *possible* are provided, to give some insights its role in how scientific advancements come about in economics.

It is important to note that no dictionary entry could *possibly*, even if that may sound ironic, pay homage to the diversity of the various instances in which the *possible* is a constitutive element of scientific advancements in economics as it is used, probably, in all subfields. This entry will attempt to shed some light on the role of the possible in economics, via the provision of an analysis of its role as well as via a few illustrations of its usage.

The Possible in the *Episteme* of Economics

The Possible in the Objects of Research of Economics

Economics studies on individuals and economic agents, in particular groups, firms, or states interact with value and decide on how to allocate resources. This leads to the studying of production, consumption of goods and services, as well as trade or the allocation of goods. Economics applies to many areas of economic life, in particular in the behavior of firms and businesses, in finance, and in government intervention in the economy. Economic analysis is also applied to various areas of social, family, and biological aspects of life, such the study of education, health care, crime, family, real estate, personal finances, politics and administrative life, law and legal system, social institutions, war, the environment, and science. All of the topics relate fundamentally to *the possible* in that they deal with how resources are valued by and allocated among individuals and economic agents.

Dealing with how individuals and economic agents decide over value and the use of resources implies that economics studies primarily the impact of scarcity of resources. This account of scarcity is one of the identity landmarks of economics; the so-labeled dismal science is often

described as the science of scarcity. The resources that are typically conceived as scarce are land, water, labor, health care, roads, utilities, etc. In that, the notion of what is *possible* in economics is conceived in its *episteme* as what is *achievable* in terms of economic output and distribution of income given the scarce resources that are available. The social and economic organizations that make these resources available and their allocation *possible* are the central object of study in economics.

It is important to note that economics expanded its scope by including factors drawn from neighboring fields. For instance, more on the inclusion from psychology can be found in DellaVigna (2009), from neurosciences in Camerer et al. (2005) and from machine learning in Mullainathan and Spiess (2017). Three important examples of these inclusions are the notions of computational abilities (Simon 1955), of capabilities (Sen 1993), and of voice (Banerjee and Somanathan 2001). In those cases, the inclusion of computational abilities draws from computer sciences, cognitive sciences, and psychology, and the inclusion of the notions of capability and voice draws from philosophy, developments studies, and psychology. Inclusions from neighboring fields expand the scope of the *possible* in economics, enriching modeling and empirical abilities of economists. For instance, it adds empirical methods as well as *potential* explanations to economic phenomena that could not be explained by commonly used economic factors.

The Possible in Models in Economics

In economics, models are theoretical constructs representing economic facts and processes using a set of variables and a set of relationships between the selected variables. Economics relies on different types of models, including mathematical models, graphical models, game-theoretical models, econometric models, or even agent-based models. Some are stochastic, in that they include random variables that are central to the functioning of these models. Some are non-stochastic, in that they are quantitative and rely on variables that are qualitative or quantitative

observables. Finally, some are simply qualitative, in that they depict relationships without referring to quantitative measures of these qualitative variables. All economic models rely on the assumption that the variables are relevant and the studied processes are inherently *possible*. Although the distinction between macroeconomic models and microeconomic models is becoming less relevant as microeconomic foundations of macroeconomic phenomena are now commonly investigated, for simply, this entry is organized around macroeconomic models and microeconomic models.

Macroeconomic models deal with the scientific precaution of studying *the possible*, in terms of expanding the potentiality of a model, by including in their analysis what is labeled “model uncertainty.” Model uncertainty refers to the “condition of analysis when the specification of the model of analyzed process is open to doubt” (Onatski 2008). Various approaches are used to represent model uncertainty and they all try to account for the different sources of uncertainty. For example, “evolving model uncertainty” accounts for the fact that the prospective of policy choice affects model uncertainty and the set of *possible* models and relevant parameters should be sensitive to this prospective. Another example is what has been labeled “local model uncertainty” (Onatski 2008) and which consists in building around a model a set of models that are hard to distinguish from the original models; this approach has been used by Hansen and Sargent (2014). These methods for expanding the scientific scopes of models provide some structure for scientific advances as well as policy decisions. Onatski (2008) remarks that one way is to “expand a given model to a more general class and to formulate a subjective prior over this class.” It is important to note that there is no standardized way for representing model uncertainty and that subfields in economics adopt strategies that are specific to their subfield, as shown, e.g., in Berger and Marinacci (2020) for environmental economics. Such efforts provide some guidelines on how to add *possibles* to the sets of explanatory variables and identified processes that may be covered by the model, although not in a most direct fashion.

Microeconomic models, which study the behaviors and interactions of individual economic agents, such as people or firms, account for the *possible* by making risk and uncertainty systematic and fundamental components of the analysis of decision-making. Situations of risk refer to situations in which probabilities are known; for example, insurers know the probabilities of specific accidents, because empirical measures of the frequency of such accidents have been collected for a significant period of time. Decisions in risky environments are typically depicted using the von Neumann–Morgenstern utility theorem (1958). In this workhorse model, an individual or an economic agent who face risky (depicted as probabilistic) outcomes of different choices will behave as if he or she is maximizing the expected value of a function that is defined as the sum of all *possible* prospects, each multiplied with their probabilities associated. The *possible* is described as a sum of *probable* prospects. Situations of uncertainty refer to situations in which probabilities of events are unknown; for example, economic agents know that interest rates can go up, remain stable, or go down, but they cannot assign probabilities to these states of the economy. In fact, risk, with known probabilities, is not treated as a separate case, but as a sub-case of uncertainty, as explained by Wakker (2008), who further states that, “many results from risk naturally extend to uncertainty,” opening the road for explaining why less certainty is in fact less unnatural than more certainty. For instance, the Bayesian approach, based on de Finetti (1931), Ramsey (1931), and Savage (1954), which is a very common way to model uncertainty in economics, relies on the assumption that individuals assign subjective probabilities to uncertain events. As stated by Wakker (2008), “they then evaluate prospects [...] through their (subjective) expected utility [...]” A substantial amount of research is dedicated to the empirical measurement of subjective probabilities. So even when probabilities are not objective in the sense that they are the result of a data collection process on the frequency of the *possible* events, they may exist as theoretical and empirical constructs in economics. Economists find ways to include subjective *possibles*, what individuals

evaluate as likely, when fundamentally these cannot be the results of a fully objective data collection enterprise. This leads us to consider now the role and importance of the notion of the *possible* in empirical methodologies in economics.

The Possible in Empirical Methodologies in Economics

Empirical research methodologies are numerous in economics. Economists use statistical data that they study with econometrics and machine learning techniques, quasi-experimental methods, natural experiments, randomized control, laboratory experiments, surveys, and, more recently, methodologies borrowed from medical sciences, cognitive sciences, and psychology, such as self-declared subjective states, neuroimaging, and physiological measures and from computer sciences with machine-learning techniques. Although they vary in terms of the empirical outputs that they generate, empirical methodologies in economics have much in common, namely, that use probabilistic approaches and that they mostly seek the establishment of causal relationships – although the documentation descriptive statistics of economic phenomena is also central in economics, but secondary in importance. Empirical methodologies in economics relate to the *possible* in that they aim to document the most likely invariant economic relationships, given the current falsifiable analytic apparatuses. This leads to scientific debates. For example, the Philips curve – that has been used to study the relationship between inflation and unemployment – has been an object of research that has evolved since Philips's (1958) initial article, notably because of empirical advances that allowed for better documentation of important factors such as the role of expectations which impact the relationship between inflation and unemployment.

Economists started out their empirical enterprise with a very cautious and ambitious outlook. Frisch illustrates (1933) this early vigilance and aspiration: “At present I am only guessing very roughly at these parameters, but I believe that it will be *possible* by appropriate statistical methods to obtain more exact information about them.”

The notion of the search for improvements in empirical techniques remains structural in economics, and the development of a methodological innovation that extends the knowledge of what is achievable in terms of data collection and empirical analysis is a central aspect of what is conceived as a scientific contribution. Ground-breaking methodological contributions are published in leading economics journals. For instance, the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel is also given for methodological contributions, as for example to Vernon L. Smith “for having established laboratory experiments as a tool in empirical economic analysis [...]” or to Trygve Haavelmo “for his clarification of the probability theory foundations of econometrics [...]” In that, empirical methodologies and the resulting empirical outputs are central to the relationship of economics to the *possible* as pushing the limit in terms of what can be *achieved* in terms of scientific abilities.

The Possible in Core Notions of Economics

The Possible in the Notion of Production in Economics

The studying of production in economics can be described as an inquiry into the depiction of what is *possible* in terms of what is *achievable*. Constrained optimization modeling techniques are tools for studying achievable levels of production under constraints. In economics, constrained optimization is done typically using the Lagrange multiplier method and the linear programming method. These mathematical techniques allow to maximize the level of production under a set of constraints that are defined by the scarce resources.

The production-possibility frontier depicts the achievable total output that can be produced by different combinations of input quantities with a given technology and total factor inputs. Each point on the curve shows potential total output for the economy, which is the maximum feasible output of one good, given a feasible output quantity of other goods, as because of scarcity of resources, the use of inputs for one good, takes

away resources available for other goods. At the microeconomic level, the important aspect of production-possibility frontier is that it shows that achieving a certain level of production of a certain good entails an opportunity cost as the opportunity of producing the other good is diminished. Thus, making something *possible* comes at the cost of not allocating available resources to other *possible* economic activities. At the macroeconomic level, the production-possibility frontier allows to show the points at which a region's or a country's economy is most efficiently producing its numerous goods and services. By depicting this highest possible level of production, it illustrates how the region or country may allocate its resources in the most efficient way *possible*. Also, any point within the production-possibility frontier is not "Pareto efficient" – named as such after the Italian economist Vilfredo Pareto – because the total output of commodities is below the *possible* output capacity.

The Possible in the Notion of Consumption in Economics

The studying of consumption fundamentally relies on a similar assumption and theorizing. The act of consumption results from the arbitrage between available quantities of goods or services under the budget constraints individuals or economic agents face. Consumption in economics is about maximizing utility under scarce resources than deciding among alternative goods given their features as a psychological process; much of the core studying in economics is on how prices influence the choice among alternatives given the budget constraint. With respect to consumption, the *possible* is understood as the achievable level of utility, given the budget constraint. Recently, more attention has been given to the impact of what has been labeled the "scarcity mindset" (Mullainathan and Shafir 2013), which refers to the impact of facing financial constraints on the process of making decisions. The "scarcity mindset" is most prevalent among the poor as they lack income, but this mindset may also apply to nonmonetary dimensions of life and therefore affect those who are not poor.

The Possible in the Notion of Trade in Economics
The most essential expression of an economic activity that can be recorded is the occurrence of trade: goods that have been produced are sold and bought to be consumed via an organization of the exchange, which may be done via a market, bargaining or regulated exchanges. Economics offers several theoretical apparatuses and empirical methods for studying trade, and they all relate to the *possible* in that they study the *realization* of the trade between a seller and a buyer. In economics, an Edgeworth box, named after Irish philosopher and economist Francis Ysidro Edgeworth, is a graphical representation of a closed economy with just two commodities and two consumers, and the dimensions of the box representing the total quantities of the two goods. Any *feasible* allocation of the goods between the two consumers is represented as a dot in the box. With respect to the *possible*, the Edgeworth box depicts the *feasible* allocations of the quantities of goods between the two consumers, and although it states that some allocation dominate others – for instance, an allocation that is preferable for one consumer and no worse for the other "Pareto dominates" allocations that do not have these properties – all feasible allocations can be represented and compared and they correspond to *possible* allocations of the goods, although most are neither efficient nor equitable. Another tool that is a central constitutive element of the analysis of trade are the notions of comparative advantage in international trade, developed initially by Ricardo (1817) and largely used in current international trade research (see Costinot and Donaldson 2012, Eaton and Kortum 2012 for recent methodological entries on Ricardo's theory of comparative advantage). With respect to the *possible*, Ricardo's theory states that an economy has a comparative advantage if it has ability to produce a particular good or service at a lower opportunity cost than its trading partners. Thus, if two countries engage in the free market and there are differences in labor productivity between both countries, then each country will increase its overall consumption by exporting the good for which it has a comparative advantage while importing the other good. International trade allows to

increase for each country the *possible* overall consumption.

Usage of the Possible in Economics

The Possible and the Discovery of the Limits of Theoretical Apparatuses: An Example – The Treasures and the Limits of the Nash Equilibrium in Economics

Game theory in economics is widely used to study interactions between individuals and economic agents. The Nash equilibrium, named after John Nash – who received the 1994 Nobel prize together with John Harsanyi and Reinhard Selten for their work on non-cooperative games, states, put simply, that in interactions, each player is assumed to know the equilibrium strategies of the other players and that, if that players choose strategies that lead to a Nash equilibrium, no player has anything to gain by changing only his or her own strategy (Nash 1950). Thus, in games in which the economic incentives are such that no player will gain economically from deviating from the Nash equilibrium, no player should, in theory deviate from the Nash equilibrium. There are situations in which the Nash equilibrium has been documented empirically – as in one-shot games – and situations in which it has not been as validated both with experimental as well as observational data. Goeree and Holt (2001) report laboratory data for games that are played only once, and for each game they document “the treasure is a treatment in which behavior conforms nicely to predictions of the Nash equilibrium or relevant refinement” and “in each case, however, a change in the payoff structure produces a large inconsistency between theoretical predictions and observed behavior.” Empirical validations and deviations of the Nash equilibrium have also been reported for games that are played more than once as well as in natural settings. Goeree and Holt (2001) report that the documented “contradictions are generally consistent with simple intuition based on the interaction of payoff asymmetries and noisy introspection about others’ decisions.” Several other *possible* explanations for the deviations have been documented in economics; this scientific inquiry into the

discovery of the *potential* factors that may, under certain conditions, falsify this theoretical apparatus is an illustration of how economics uses the *possible* in the dialogue that is organized between theoretical and empirical research.

The Possible and the Proof of the Existence of Mechanisms: An Example – The Robustness of Market Equilibrium and the Existence of Alternative Market Mechanisms in Economics

The notion of market equilibrium describes situations in which demand and supply forces are balanced, the situations in which they equilibrate. Supply and demand meet at a point in which the equilibrium price leads to no surplus, in the sense that the quantity supplied is no greater than the quantity demanded, and it also leads to no shortage, in the sense that the quantity supplied is no less than the quantity demanded. At this price, the suppliers do not have excess inventory as the price is low enough so that buyers could buy and they do not face shortage of inventory as the price is high enough so that the quantity that sells is lower than the quantity that would have sold at had the price been lower. Although quite intuitive, this market equilibrium mechanism remained at least partially a hypothesis until proven in experimental settings. As Vernon Smith (2002) puts it in his Nobel biographical essay: “To my amazement the experimental market converged ‘quickly’ to near the predicted equilibrium price and exchange volume, although there were ‘only’ 22 buyers and sellers, none of whom had any information on supply and demand except their own private cost or value.” The convergence of experimental market when buyers and sellers do not have any information about the market equilibrium but only individual values and costs proved that information diffusion is made *possible* by the experimental market institution in that the several trading periods allowed the traders to obtain experience, information about the clearing prices and to adapt over time. This so-called “ecological rationality” is one of the more advanced scientific expression of what Hayek (1945) had stated when defending that the sum of knowledge held by all members of society is greater than the knowledge held by individuals as knowledge spread throughout society.

The Possible and the Implications of Economics Type of Thinking: An Example – The Notion of General Equilibrium in Economics

The notion of general equilibrium, which was initially developed by Leon Walras (1874) in the late nineteenth century, accounts, in its simplest form, for how supply and demand interact and tend toward a balance in an economy of multiple markets working at once. This balancing leads ultimately to a price equilibrium, which accounts for competing levels of supply and demand in different markets. Although not all of economics is done in general equilibrium setting in that analysis is done in one market – such analysis is labeled “partial equilibrium analysis” – the fact that economists are cognizant of general equilibrium has an impact on how research is conducted and how the *possible* is conceived. For instance, the pervasive use of probabilistic approach is to be conceived as a cautious measure to account for the fact that *ceteris paribus* analysis may not account for the general equilibrium “adjustments,” which describe the fact that what happens in a market may impact other markets of the economy and, in turn, re-impact the initially estimated variables. For example, the increase in take-up in professional training in a given region may increase overall employment, and thus generate demand for goods and services in sectors of the economy that were not the object of the analysis initially, that in turn raise further the demand for education and, *possibly*, the overall take-up in professional training. The initial empirical estimates did not account for these general equilibrium effects but the use of probabilistic approach provide a cautious measure of how parameters evolve given the limited number variables that are taken into account in a given analysis.

Conclusion

The use of the *possible* in economics is mainly determined by whether the *possible* is used for theoretical or for empirical research. Theoretical research in economics relies primarily on a notion of the *possible* that describes what is achievable or

feasible given the available resources. Empirical research in economics relies primarily on a notion of the *possible* that describes what is likely or probable in terms of explanations for the economic phenomena observed.

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Possible in Education

M. S. Neves-Pereira

Universidade de Brasília – UnB, Brasília-DF, Brazil

Abstract

Education is a masterful word. Masterful comes from master, mastery, skills, virtuosity, expertise, teaching, and learning, making something possible. There is no one single social group whose members do not educate each other. Regardless of the level of development of a society, all its members are educated throughout their life cycle. Education may come through formal means, through schools, universities, religious education, and other institutions, or during daily experiences in the confrontation of day-to-day life, which demands multiple learning. To talk about education is to talk about our history, to think about the long life path in which we are subjects of a culture together with each other, in social interactions. To speak of education is to think of possibilities and to think of possibilities places us before limits, barriers, impossibilities. The word Education comes from the Latin verb *educare* that unfolds into two different meanings: *ducere*, which means to take, guide, lead someone somewhere, and *educare*, which is linked to the sense of nurturing, raising (a child), and making

(someone) grow. In this entry, we will talk about education in its formal dimension: one that involves human development processes, that generates the new, that demands teaching, that generates learning, and that requires creativity. We will discuss these processes in the light of the philosophy of education, cultural psychology, and the psychology of creativity, seeking to understand how educational acts transform human beings, (re)signifying their existential experiences and changing the world in which we live. Possibilities and impossibilities will be problematized throughout this discussion.

Keywords

Education · Possibilities · Human development · Creativity

Education Is the Land of the Possible

Education is the Land of the Possible. It is the praxis that constitutes our humanity, our condition as bodies conscious of themselves, the other, and the world. It is through education that we take hold of the legacy of our species. It is the indispensable condition for the construction of the historicity of man. When human beings educate one another, they push the wheel of development of our species. Educating has to do with leading and mediating others in the face of the challenge of existence. To survive we need to learn whom we are, how the world around us works, we need to develop psychological functions, master language, and our mother tongue, and we need to build beliefs, values, and views of the world. Freire (2013) already said that “nobody educates anybody nor does anybody educate themselves; men educate one another, mediated by the world” (p. 1247). In this entry, we will look at formal education, the one offered intentionally in institutions. We will use the pedagogical and psychological discourses of different authors as a resource for analysis to reflect on the dimension of the “possible” in the human educational and developmental experience, processes that are potentiated by teaching. When we arrive at the school, we

bring a huge baggage of knowledge that will be confronted with the knowledge historically constructed by humanity, immersed in the school contexts; we concomitantly start to become subjects of knowledge and subjects of culture (Vygotsky 1991). Our human potentialities and possibilities will arise; values, beliefs, and views of the world will be constructed through the dimension of identity that we understand as subjectivity, self, as the view we build of ourselves, and that is transformed throughout the life cycle. Development processes have specific marks, characteristics, and dynamics. These processes include the gestation of the new and the presence of creativity in its multiple aspects (Valsiner 2014). Educational acts transform human beings, (re)signifying their existential experiences and changing the world in which we live. Educational acts promote human development. Human development is a creative process and therefore opens to all dimensions of the possible. We return to school as the Land of the Possible, where our species dwells and lives. At this point, a question arises: how to make real what is possible from educational practices, since the impossible is part of the very process?

Possibilities in Education: The Ways to Think About This Relationship

Thinking of education as a space that creates possibilities requires from any author consistent epistemological and theoretical positions capable of providing elements that allow an appropriate analysis of the theme. In this entry, we will problematize the pedagogical practices starting from plural theoretical positions that have been dialoguing during the last decades as a consequence of their ontological and ontogenetic vocations. We will explore Paulo Freire's work (Freire 2013, 2015, 2017) and the contributions of Bruner (Bruner 1990; Marsico 2015; Takaya 2013), two great theorists who have placed education and psychology as fields of possibilities in mediating processes of human awareness and humanization. Freire and Bruner interconnect the fields of psychology and education based on

unique existential experiences – the former lived the vicissitudes of being a Brazilian educator persecuted and exiled by a disastrous military regime and the latter was born in the USA, experiencing, in theory, a full and consolidated democracy. Their interconnections allow us to look into the educational phenomenon as a context for the construction of possibilities, as a phenomenon born in the collective, in cooperation, in the alterity that makes us see and perceive others, in the processes of awareness of the subjects, their humanity, their right to education as a means of achieving a dignified and fair existence. By integrating the human developmental dimension into the discourse of liberating and promoter pedagogies of the possible, we will use the cultural psychology (Valsiner 2014, 2019), a theoretical model that deepens the understanding of the subject in joint-construction of himself, in relationships of alterity and immersed in different socio-cultural contexts, including schools. Finally, the cultural psychology of creativity (Glăveanu 2014, 2015; Glăveanu and Neves-Pereira 2020) closes this discussion by highlighting the act of creating as an action that connects the real, the imaginary, and the possible as praxis of human liberation, as an experience shared by all social groups, in different forms, ways, powers, and possibilities and, arguably, linked to educational and developmental processes. The act of creating inserts us into the world of the possible, and therefore cannot be seen as an action detached from becoming the subject of culture and learning.

Paulo Freire's Educational Practices and the Universe of Possibilities

Educators generally regard education as a promoter of possibilities. It sounds quite obvious that education opens doors and broadens human paths. This scenario would be perfect if real existence was not harshly positioned before this dynamic, turning practices that generate the possible into acts, sometimes little promising (Freire 2013; Fourez 2006). In different countries, public policies, pedagogical projects, and teaching plans

emphasize ambitious and humanitarian educational objectives, always aiming at the comprehensive training of the human being, the mastery of the literate culture, the development of literacy and the insertion of the subjects in the world of the written language, the training and development of logical-mathematical reasoning, the construction of knowledge in the human and natural sciences, among many other purposes that launch the children, qualitatively and quantitatively, in a world far beyond what they supposedly knew before entering school. Being formally educated, attending a school is a phenomenon that definitely changes subjects, not always towards the noble educational goals. A quick analysis of the purposes of formal education systems in the most diverse socio-cultural contexts leaves no doubt that education arises as a redemption of the human being, as an action that will insert subjects into the literate culture, which will enhance their cognitive and creative capacities, and many times education is perceived as the only possibility of development of a nation. Educating is an action that promotes changes, individual, collective, and social transformations. However, the school is not always a space capable of leading to new possibilities, in many ways. The school, we must not forget, is a social institution at the service of the State, the society, power groups, and tends to reproduce their explicit and implicit norms, rules, values, and principles (Fourez 2006).

Paulo Freire's critical and politicized pedagogy (2011, 2013, 2015, 2017) puts a hand on this wound. Freire speaks of school at the service of the ruling power, of teaching as an instrument of human oppression in an objective, direct, and courageous manner. His model consists of a theoretical approach that plunges into education as a context of (many) possibilities, but invaded by impossibilities created in the dominant socio-cultural and political spaces in capitalist societies. To educate, in the view of Freire (2011), is to recognize the subject whose body was politically interdicted by his/her oppressors and, therefore, not recognized in his/her humanity. He highlights the dynamics experienced by this subject to whom the educational and existential experience was denied: the subject of a body that can only be educated with

his/her peers and at the moment when he/she becomes aware, that he needs to free himself/herself from oppression and become an agent of change (Freire 2013). Freire discredits the regular education systems that often treat teaching as a banking transaction, where teachers (the possessors of knowledge) deposit the knowledge in the minds of the students (the receivers of knowledge and devoid of it) who can later draw these knowledge and transact it in life for money, work, or position. This view of education disqualifies the subject as an agent and protagonist of the construction of knowledge, making the learning process dissociated from life and its socio-cultural, economic, and political implications (Freire 2013, 2015). The oppressed one is educated to reproduce the social and political system in which he lives and, since this education does not emancipate him, endowing him with administration and freedom of action, the student ends up reproducing the system of oppression that imprisons him/her. To be a generator of possibilities, pedagogy has to be liberating, problematizing, and a raiser of awareness in the full expression of these concepts. It has to be a sort of pedagogy of "the" oppressed one and not "for" the oppressed, because only the oppressed one can break free. The oppressor does not free anyone because he/she cannot afford to do so. Freire (2013) is radical when he says:

The practice of freedom is incompatible with a pedagogy that, consciously or mystified, has been a practice of domination. The practice of freedom will find adequate expression only in a pedagogy in which the oppressed can reflexively discover and conquer himself/herself as subject of his/her own historical destination. (p. 57)

What are the possibilities of education in the face of a radical pedagogy like Freire's? What are the paths that allow the liberation of the oppressed ones, who constitute the majority in the human species, in the face of the oppressors? What to do when faced with the possibility-killing reality of the school? As highlighted by Brighente (2016):

(...) therefore, a worldview that denies and forbids men and women ends up being reproduced and legitimated by the school. When educators deny that their learners are subjects, they "fabricate" objects to create the homogeneous and standardized mass of the capitalist mode of production, to

produce and reproduce the rules and culture imposed by the dominant individuals, maintaining the *status quo*. (p. 159)

Pedagogical models that understand education as social and political processes engendered in social interactions and contaminated by all the values, beliefs, laws, and desires of men who dominate groups, social systems, and nations, and know that there is no naivety in this cause (Dale and Hyslop-Margison 2011; Freire 2013, 2015; Fourez 2006; Giatti and Murzyn-Kupisz 2019). To educate a human being means to endow him with some kind of power, even if it is the power to know how his name is written. This little piece of knowledge can revolutionize lives. The fact that education is a carrier and promoter of “so many” possibilities makes it a critical area that lives under the eyes of power. How to deal with so many limits, impediments, and restrictions and, despite the owners of the world (Chomsky 2016), make education a democratic gate to human possibilities?

Jerome Bruner's Educational Practices and the Universe of Possibilities

Psychology has made important contributions to pedagogical discussions by placing human development and learning as interdependent and co-constituting processes of human psychological functions. Bruner (1990, 1996; Marsico 2015, 2017; Takaya 2013) is one of the authors who understand education as the core of the process of becoming human. In his work, he stresses education in a very significant way, seeking not only articulations between the psychology he practiced and educational processes, but also stating his position as an author committed to the education of his country. In his 100 years of life, Bruner devoted much of his time to educational studies, investigating the importance of education for the construction of psychological processes (Marsico 2017), the relevance of the curriculum for formal education, the intricacies of teaching science in schools, and how teaching methods should address school content (Leme 2011). His studies on cognition, perception, and the processes of

significations (this last theme was motivated by his work relationship with Luria in the 1950s) led him to question aspects present in the learning processes based on his knowledge of psychology.

Bruner's questions were not the same as Paulo Freire's with his politicized pedagogy. Bruner did not embrace the political dimension of education but rather its psychological dimension. His questions arise from theoretical models practiced in the United States in the twentieth century, and his forays into other cultures, including Vygotsky's and Luria's Russia. His contributions come from the dialogues and bridges he built between psychology and education, signaling a world of possibilities present in the processes of human development, learning, and especially in the act of teaching (Leme 2011; Marsico 2017). In summary, we can call Bruner's psychology as constructivist, oriented to ontogenesis and considering semiotic processes as mediators of human development, managed by a subject that is circumscribed to time, which is irreversible (Marsico 2017). As the author points out:

Human agents doing things on the basis of their beliefs and desires, striving for goals, meeting obstacles which they best or which best-them, all of this extended over time. It is narrative in nature, that has 'inherent sequentially' or plot. This feature determines 'the mode of mental organization in terms of which it is grasped'. (Bruner 1990, p. 44)

The subject who builds himself through complex developmental processes, immersed in different shaping sociocultural contexts of these processes and still counting on typical biological limitations of our species, is yet able to overcome his limitations, to go beyond his own history, imagining and creating, build new worlds, ideas, and works (Glaveanu and Neves-Pereira 2020; Neves-Pereira and Silva 2019; Valsiner 2014). For Bruner (1996), man is able to unite these poles: the real and the imaginary, the current and the possible. Man is a being of possibilities, dealing with constraints, social rules, norms, and laws, but capable of breaking with his own history, giving rise to the new. Bruner sees man positioning himself, ontologically, between the possibilities and interdictions present in the sociocultural and political contexts, facing and resignifying these interdictions through

his ability to imagine and create the impossible. Marsico (2017) highlights:

Cultivating the sense of what is possible in our educational practices well represents the Brunerian constructivist vision of the human being as a future-oriented agent who strives to overcome the borders of actual reality towards new possible worlds. (p. 11)

Bruner (1996) reinforces the ontological vocation of the human species to overcome limits, by imagining and creating possibilities in multiple contexts. Man's perceptive and symbolic capacity throws him far beyond existential barriers and limitations, allowing for creative, disruptive learning that articulates and surpasses the real, the imaginary, and the possible. Bruner was a visionary, betting on the ability of new generations to develop their creative potential, to imagine new scenarios for the world and build them (Marsico 2017).

Bruner's legacy to education is very well expressed in Marsico's (2017) speech, which highlights:

Cultivating the meaning of what is possible in our educational practices represents well the Brunerian constructivist view of the human being as a future-oriented agent who strives to push the boundaries of current reality toward new possible worlds. (p. 763)

The Pedagogy of the Possible: The Real, the Imaginary, and the Creation

An education that considers the relevance of psychological processes in development, with their constitutive dynamics, and that understands how the subject learns and builds his/her view of himself/herself and of the world (Valsiner 2014) is able to promote the Freirean praxis (Freire 2013), that is, it is able to embrace a pedagogy that mediates the subject in the act of reflection that inserts him in his own history and in the world, transforming his reality, constructing his humanity. By articulating teaching and life, imagination and creativity, this pedagogy promotes the possible. This "possible" is not an innocent or naive phenomenon, but an existential condition that perceives itself dealing with the limits of the lived experience, with socio-cultural barriers, facing the absence of autonomy, which is taken away

from subjects by norms and rules and returning power, knowledge, and capacity of action to the agent. It is in the perception of the limitations imposed on the possible, in the efforts of the oppressors to institutionalize the "impossible" that the power for the new arises. There are cracks in these gears that allow barriers to break down and creativity to flourish, to awaken a world of possibilities. Despite the oppression, impossibilities, and interests of powerful individuals, the power of education is unstoppable because it inhabits cracks, hiding places, subtexts, and other real and symbolic contexts that characterize the spaces of resistance.

Bruner (Marsico 2017) used to say that life always includes a dialectical clash between limitations and possibilities and that perhaps the way out of this clash was situated at the boundaries between possibilities and impediments throughout the human developmental processes. Cultural psychology also proposes a perspective of man in innovative development, creating theoretical and methodological possibilities to investigate, analyze, and theorize about development processes from a different perspective, open to the new and to the possible. Discontent with what is "established" has been moving psychology theorists to transform scenarios and propose more creative views about man building himself and the world in a two-way, co-constituted, and profoundly creative manner (Glaveanu and Neves-Pereira 2020; Valsiner 2014).

In almost every school, where social, political, economic, ideological, and pedagogical interference take place, children struggle with meeting school demands and/or building a sense of belonging in relation to themselves, to knowledge, to the school itself, and to the world. How can one imagine, in multitone contexts, the development of creativity, for example? Research about processes of development of creativity at school (Neves-Pereira and Branco 2015; Neves-Pereira and Silva 2019) has repeatedly shown how values, beliefs, pedagogical models, interferences of pedagogical, administrative, and political management prevent that creativity, as a human resource, flourish in schools so as to benefit the entire academic community. These unpromising scenarios, however, are also inhabited by real possibilities that open

the way for imagination and creativity to point out possible paths. The social and collaborative nature of creativity, its symbolic dimension, and its developmental perspective (Glăveanu and Neves-Pereira 2020) place it in the fertile ground of possibilities. If education is the Land of the Possible, as stated at the beginning of this text, creativity organizes the arena where possibilities emerge as acts, works, productions, and intentions of subjects. These possibilities take shape, transforming minds, lives, changing the world, promoting autonomy, and rehearsing freedom and human empowerment. Creativity is the human resource that integrates the real, the imaginary, and the possible in the form of creation. As an exclusively human action, creative expression and action become indispensable for any educational system to in fact achieve humanizing goals.

Conclusion

Embracing the crisis that arises when one disagrees with the zeitgeist is essential for the development of science. Fourez (2003) explains that the word “crisis” has an interesting definition in the Chinese dictionary: it is formed by two ideograms with different meanings. The first ideogram means “danger” and the second “possibility or opportunity.” It is the second ideogram that will inspire the final reflections on education and its power to generate human possibilities. The authors discussed in this entry made a critical analysis of educational and psychological scenarios through different theoretical, social, and political paths. Besides problematizing the real experience of the subjects in educational contexts, they also considered paths that can be built to promote a successful school experience, so as to open the gate of possibilities (if not for everyone, at least for some), so that human and cultural renewal may take place in the history of mankind.

Paulo Freire (2013) points to the force present in the act of teaching, to the power existing in the teacher and in the students who, together, are able to mediate cognitive processes among them. As critical investigators, students and

teachers look at reality, recreating it, bringing out the new in various ways, such as: the autonomy that comes from the act of teaching and learning, the construction of oneself as a subject inserted in the world. This subject born of this pedagogy, which is also autonomy (Freire 2011), is an actor and author of his/her history despite the social, historical, and political limits that must be faced, investigated, and overcome in multiple ways. Bruner (1996) insists on the power that resides in beings capable of signifying their worlds in the most diverse ways, in subjects who develop, learn, and teach creatively and innovatively, in the human possibilities they find in schools, scenarios to develop. Cultural psychologists (Glăveanu 2014, 2015; Valsiner 2014) bring the breath of creativity not only as an object of study and theorization, but especially as a human resource that is unquestionably present in our species, perhaps the only resource that allows the effective realization of what once was a mere possibility.

Creativity is inscribed in the human experience as the road to the Land of the Possible. Only the subject, agent of himself/herself and of his/her creativity, is capable of building possibilities. In his/her developmental path, immersed in cultural contexts and close to others, this subject can transform lives, change the world, reconstruct cultural meanings, and even destroy everything we know as existence. Education is the tool we have historically invented to mediate the human power to create. May we use this energy wisely, ethically, and with humanity. Certainly, the possible will emerge out of creativity.

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Possible in Human Development

Ramiro Tau

Faculty of Psychology and Educational Sciences, Université de Genève, Genève, Switzerland

Abstract

The notion of “human development” is used polysemically in everyday language, it is present in popular media, political discourse, and several different branches of the sciences, and these iterations often contain ambiguities that are the result of non-specific notion of “development”. In very broad terms, “development” usually refers to the progressive series of changes in a behavior, a function or a structure throughout the life of a person, an organism or a society. Within this series of changes, “the possible” is often characterized as the constantly evolving spectrum of future scenarios, usually in the form of an unachieved but pre-figured stage or phase, or as the opening toward essentially unpredictable transformations. In any case, it is possible to recognize in this diversity a series of common, although generally diffuse, ideas: change over time, evolution, growth, transformation, increase of certain magnitudes, and the passage from a potential and latent state to a current and expressed one. When the notion of development refers explicitly to the human, it can suggest changes in phenomena as wide-ranging as those concerning the biological body, and the mind of the individual to the political and economic macro-processes that take place in large societies. However, the notion of “human development” is most often used as a syncretic category, bringing together in a holistic way all these biological, psychological, or social dimensions. In these cases, it is often confused with some form of evolution, both in its teleological versions or in those that do not recognize a pre-designed directionality, even if they attempt to explain or describe changes over time. These different conceptions

of human development are always supported by a corpus of metatheoretical assumptions. In particular, those commitments that refer to the recognized entities, the nature of changes, and the reasons for their occurrence.

Keywords

Human development · Transformation · Change · Variation · Possible · Time

Within the scientific context, “human development” is a polysemic notion, which takes on highly variable meanings in different scientific traditions and fields of reference (Lerner et al., 2015). In some cases, it refers to changes that can be identified throughout a persons’ life, as primarily endogenous or internally driven processes. Other perspectives emphasize the socio-material conditions that enable the expansion of human capabilities (Ul Haq, 1995). In the latter sense, human development is the direct or indirect effect of the context on the subject. Beyond these two schematic and opposing positions, all definitions of human development attempt to coordinate these two poles, in different ways and with variable success, in order to explain or at least describe changes over time. Whether emphasizing context or internal processes, some kind of necessary relationship between individuals and the world is accepted to a greater or lesser extent (Valsiner, 2000). In other words, the explanation of change requires the recognition of complex interactions between factors at multiple levels. However, this broad agreement on the principle of interaction between the social and the individual is less pronounced than the disagreements that manifest when it comes to explaining concrete phenomena (Lerner, 2012; Overton, 2015; Overton & Müller, 2003). Each discipline and theoretical tradition proposes its own models of change in the human domain, with different perspectives on what change means and why and how change happens (Lerner, 2018; Overton & Müller, 2003). This is not as a result of limited conceptual unification efforts, but rather as an inevitable consequence of the different epistemic frameworks involved (Castorina, 2021). Indeed, economic

theories are predominantly interested in the social and material conditions that facilitate or restrict certain human capabilities. Something similar occurs in the field of biological sciences, which are much more focused on the physicochemical interactions between an organism and its environment. For their part, psychology, epistemology, philosophy, linguistics and other sciences interested in the production of meanings put the accent on the processes that give rise to or shape the semiosis that guides actions. The existence of these fields of specificity does not imply to deny the simultaneous intervention of multiple levels in the developmental phenomena under consideration, but not all dimensions are pertinent or significant for the explanation or modelling of phenomena of a different nature.

Developmental Change

To understand conceptual variability in the study of human development, it is first necessary to consider the general notion of development. Although it is usually adjectivized, its generic use designates the progressive series of changes in a behavior, function, or structure, something that occurs in a person, a living organism, or in human institutions – culture, economy, family, normative systems, etc. In almost all cases, it is an idea often confused with the notion of evolution, with continuist connotations (Doron & Parot, 1993; VandenBos, 2007). In other words, it is assumed that development is a passage from one moment, stage, phase, or level to another quantitatively or qualitatively different one, which maintains some link with the preceding one. In this transition, the later moment is usually recognized as more stable or complex than the preceding ones, with the previous ones being its necessary condition. In other words, a current form or content rests on previous ones without which it would not exist (Foucault, 1957). Occasionally, development is associated with some variety of finalism or teleology: changes have a direction or even a purpose (Rosenblueth et al., 1943). This idea about the direction that the changes follow, although criticized in biology and other sciences

(Wagner-Egger et al., 2018), today takes on a new meaning for cybernetics and artificial intelligence, domains in which artificial systems evolve and self-generate according to a set of goals defined from their initial construction (Contreras-Koterbay, 2019; Kamath & Liu, 2021). On the contrary, there are conceptions of development that do not appeal to a finalism, but to a certain efficiency, as in Darwin's theory of evolution (1859). In these conceptions, changes in the structure and function of organisms are random, being adaptation to the environment the basis of selection, orientation, and fixation of transformations. Following these theses, contrary to any preformism that considers the final stages as the manifestation of what was already latently anticipated (Van Geert, 2003), studies on phylogenesis greatly expanded theories on development (Futuyma, 2017). The detailed exploration of the combination of genetic mutations and the adaptation that results from the somatic expression of these genes consolidated the study of the dynamics between organism and context. Thus, while recognizing the zygote as the key point in the development of a biological organism, the changes that will occur in its development are unpredictable at some scales and predictable at larger ones – for example, we know with certainty that it will die. This difficulty in predicting at all levels is not due to a lack of information – operational chance, in Monod's (1970) terms – but to the essential chance that regulates the processes of open and complex systems (Chapman, 1988; García, 2006; Overton, 2006). The initial genetic conditions do not determine the subsequent course of development, but the field of possible orientations. Even though this makes it impossible to predict development, the transformations that actually occur can be reconstructed retroactively, and explained as the result of the complex and incessant interactions between the organism's dispositions and the conditions of the environment (Waddington, 1957; Valsiner & Connolly, 2003).

Following Overton & Müller (2003), it is possible to recognize some basic conceptions of change in different theories on development. On the one hand, “transformational” change is the

one that gives rise to the emergence of novelties. It is a change that produces something qualitatively new, which was not announced in the previous forms or organizations and, consequently, implies a discontinuity. This transformational change leads to increasingly complex forms and involves a dialectical relationship between continuities and discontinuities (Overton & Reese, 1981), since it is not a creation *ex nihilo*, but neither is it reducible to the preceding organizations. “Variational” change, on the other hand, is a modification of a predominantly continuous and quantitative nature. Strictly speaking, it refers to a change in the degree or scope of a function or capacity, as in the acquisition of a new lexicon or the inclusion of new beneficiaries in a legal system that remains essentially unchanged.

At least three metatheoretical solutions can be identified from these two modes of change: it is possible to emphasize one or the other, or to assume the complementary participation of both. In the first case, development can be conceived essentially as the result of a variational change. Thus, qualitative changes are the phenomenal appearance of the accumulation of variations. This solution disregards transformations and reduces them to linear, summative processes. The second solution, on the contrary, characterizes development as an essentially transformational process of qualitatively different steps, in which variations are irrelevant. Finally, in a relational model, variation and transformation can be a necessary part of a theory of development, since it is assumed that variations can result in transformations, and transformations can lead to variations (Overton & Müller, 2003).

The adoption of any of these three perspectives on development has methodological and theoretical consequences (Valsiner, 2006). The strategies for data production and analysis to study development will necessarily be different if one of these changes is considered predominant or if they are recognized as coexisting. In terms of theoretical implications, the variational approach presupposes systems of linear changes, in which unpredictability is lower. It was precisely this summative approach of American behaviorism that led Watson (1958) to make one of the most famous and enthusiastic claims in the history of

psychology: that through training and conditioning it is possible to shape the future of a healthy child, making him, for example, an artist, a doctor, or a criminal. Transformational perspectives on development, on the other hand, often fail to explain the occurrence of the observed changes. If the change results in ruptures or in moments radically different one from the other, it is difficult to see any kind of common process in such a series, which puts into question the very idea of development as a process. Unless an invariable sequence is admitted in such a model – which, in turn, renders useless any effort to modify a future confused with destiny – transformations can neither be provoked nor predicted. However, the broad spectrum of relational explanations, in which transformation and variation are dialectically coordinated, expands the field of the possible. These explanations open up a potential zone that is not reached in a chaotic manner, but also does not follow a pre-designed path. From this standpoint, development can follow completely different directions and still show a progression in which the coexistence of continuities and discontinuities can be recognized (Chapman, 1988).

The Problem of Time in Human Development

Any theory concerning development, whether explicitly stated in its research agenda or not, presupposes a particular conception of time (Lenzi et al., 2010). Nevertheless, not every theory that considers a temporal dimension implies a theory of development. In fact, not just any change or modification across time is development. In other terms, a diachronic perspective of a phenomenon is not sufficient to inscribe a theory in the field of development. On the contrary, if we assume that in development there is a dialectic between variation and transformation, the decisive aspect is the emergence of novelties, starting from previous systems or structures that do not contain them (Overton & Müller, 2003; Valsiner, 1998, 2006; among others).

Conceptions of time are often expressed in the visual form of lines, arrows, trees, or surfaces, which account for trajectories, divergences, turning points, loops, inversions, etc. (Yamada & Kato, 2006). All of these spatial representations of time are often unidimensional (Rudolph, 2006), and they often have vast implications for the modelling of theory, or at the very least expose the underlying assumptions of the researchers. Although mathematicians have developed complex structures that could be used to represent the complexities of developmental time, the social and human sciences have either ignored these discoveries or simply fallen back repeatedly on some version of physics' "clock time" (Rudolph, 2006). Indeed, even if "irreversibility of time" is accepted as an axiom in theories of human development, this claim may be insufficient or inaccurate, depending on the system and scale under consideration. Psychoanalysis, for example, has shown that, with regard to the effectiveness of certain representations for the production of symptoms, timelessness must be admitted for the unconscious system of the psyche. Something equivalent happens with retroaction, or the capacity to give new meaning to the past from the present or from some anticipation of the future (Arlow, 1986). With other objectives, Piagetian genetic psychology showed that memory is reconstructive and that the progress in the child's cognitive organization affects the mnemonic marks from the past, modifying the memory of the same event evoked at different times (Inhelder, 1970). In any of these cases, the representation of time as a line, or even with loops and inflections, is limited and poor in relation to the complexity of the temporal processes involved in these developments.

The representation of developmental time does not simply refer to the use of graphic structures, but to the very configuration of the theoretical model. Consequently, the field of the possible is expanded or contracted according to the way in which time is modeled in development. In exclusively linear models, the possible is confused with the future, since it refers to what has not yet happened, regardless of whether the projection is determinate or indeterminate. In complex models,

involving retroactions, overlaps, or different dimensions, the possible may also refer to the present and the past, which is counter-intuitive, but particularly evident in different models of cognitive or psycholinguistic development.

Human Development and Socio-material Conditions

The polysemy of the notion of “human development” to which we have already referred, reproduces in the field of development the multiplicity of the human and the problems of its definition. All the classical categories used to characterize what distinguishes humanity from nature reappear when we coconceptualize development: nature-nature, continuity-discontinuity, stability-instability, subject-others-world, etc. Although there is tacit agreement on the multidimensionality of human development, some authors began to criticize, from the beginning of this century, the vagueness or partiality of some formulations. Thus, for example, after defining human development as “human flourishing in its fullest sense-in matters public and private, economic and social and political and spiritual”, Alkire (2002) critically points out that “if human development is ‘multidimensional’ then perhaps we need to discuss what is a dimension, and what are the multiple dimensions of interest” (p. 181).

To address this, much of the literature on human development is concerned with the growth of the human organism, as well as with affective or cognitive changes of a period of life or of life as a whole – the *life-span* perspectives. Other traditions have been interested in the socio-material factors of development. Since the 1990s, the United Nations Development Programme (UNDP) has been promoting a specific paradigm for studying, promoting, and measuring human development. According to this international organization, human development is “the process of enlarging people’s choices by expanding human functioning’s and capabilities” (UNDP, 2000, p. 17). In this framework, the focus is explicitly on Man and the creation of life

opportunities, although, comparatively speaking, contextual aspects are much more relevant than in other research traditions. In fact, the Human Development Index (HDI), a statistical indicator derived from this paradigm, “measures the average achievements in a country in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living” (p. 17). Through this index, countries – not individuals or regional populations – are ranked on the basis of life expectancy, access to education, and per capita income—associated with no further consideration of the notion of “quality of life”.

The HDI is an instrument that aims to identify the field of present and future possibilities for human development. That is, to determine objectively whether people are in a position to “be” and to “do” in the course of their lives. From this angle, human development is a field of possibilities that is amplified when certain socio-economic conditions are achieved, with the freedom of individuals being one of the fundamental pillars.

Convergence Frameworks in Human Development

Since the twenty-first century, what is known as the “convergence explanatory framework” or “developmental science” has become more firmly established. This perspective, based on complex systems theory, aims to establish the general principles of human development, regardless of the type of phenomena considered (Lenzi et al., 2010). This relational systemic approach (Lerner et al., 2015) – based on a relational metatheory and on the dynamic relationship between individuals and contexts – configures a field informed by science, but also by philosophical, methodological, and epistemological reflection. The main challenge of a unified model of human development is to avoid the different reductionisms into which disciplinary models lead. This implies linking the level of an embodied agency with that of its different levels of contextual

integration. This discipline draws on different considerations of change as it is studied and explained in human studies, but also in natural disciplines, as well as in the models offered by the formal sciences.

In discussing general theories of development based on complex systems, it is necessary to mention the critique to classical causal explanation (Castorina & Baquero, 2005; García, 1999), because of its inadequacy in producing consistent complex explanations of change over time. Classical causalism establishes injective relations between causes and effects – for an event ‘a’ to be the cause of an event ‘b,’ three conditions must be met: that ‘a’ happens before ‘b,’ that whenever ‘a’ happens ‘b’ happens, and that ‘a’ and ‘b’ are proximal in time and space (Ferrater Mora, 1965). Current models of change, and especially the interrelationship between variation and transformation, cannot be captured if change is reduced to a succession of causes in the classical sense (Overton & Müller, 2003; Valsiner, 1998). Instead of exploring the underlying causes of observable changes in human development, a convergence approach attempts to explain the emergence of novelty through self-organization, as well as the exploration of the courses, disturbances, transformations, interactions, and reorganizations of a complex system.

The Possible, the Impossible, and the Necessary in Human Development

If we accept that development implies the emergence of a novelty that is not prefigured, development can only be judged retroactively, by reference to an instance in the past (Chapman, 1988). In the case of the development of social institutions or the conditions for the expansion of human capabilities, the anticipation of a direction for development is no more than an ideological imposition. In open systems, the direction that development will take is essentially unknown, as we have pointed out. This condition of complex systems will modify the possible futures, but also, at each moment, the way of conceiving the present

and of interpreting the past in its meaningful relations with current facts. In this sense, human development must be considered as a process of opening up possibilities. And in this process, the boundary conditions exert a certain action, but they do not define the perimeter of what is thinkable or achievable. As Piaget (1981) showed, the formation of possibles is a strong argument against empiricism, since possibles are not “observable” – that is, ascertained in facts – but the result of the action of subjects. If the possible is not the result of the “reading” of facts, but of the interaction of subjects with the symbolic and material world, the possible is essentially creation, invention. And this implies two symmetrical aspects: constraints and needs.

Does the idea of progress – or development – work in a multidirectional and non-teleological model? In other words, is there a way to recognize levels of progression in non-linear models? This is a key question in human development studies. The openness toward new possibilities – or more synthetically, the very development of the possible – defines a field that becomes self-gendered at every moment (Van Geert, 2003). This fundamental unpredictability that characterizes the creation of novelties and freedom has, however, limits. The paradox is that, like the development of any complex system, they cannot be foreseen. Their definition will always be given *après-coup*, once two moments of the process are known and compared. But retrospectively, an area of possible development with strong restrictions could be identified. The limits will always be fuzzy, as in Waddington’s epigenetic valleys. However, they allow us to highlight the involvement of different forces that, like attractors, modulate change (Valsiner, 2018).

The complement to this process of development consists in the creation of necessities (Smith, 2017). Indeed, one might believe that the creation of a necessity, which presents itself to the spirit in the form of a certainty – such as the belief in the persistent existence of objects that are not immediately perceived – is an obstacle to the development of new possibilities. However, necessities must be distinguished from pseudo-

necessities. While the former are the result of a deduction arising from the coordination of preceding possibles, and are the source of new unpredictable possibles prior to the conformation of the necessity in question, pseudo-necessities, on the other hand, are a certain limit to new creations (Piaget, 1983). They do not result from new co-ordinations – and are therefore not a genuine development – and find their strength in affective or ideological complexes. For example, Aristotle attributed a pseudo-necessity to rectilinear movements, which resulted in the bizarre angular representation of the trajectory of projectiles (Piaget, 1981). Pseudo-necessities that do not come from a deductive process based on the coordination of different possibilities are a constraint for the imagination and for development. In biological terms, it is a process comparable to hypertrophy. In this sense, the crucial role of the coordination of possibilities for development, both in the domains of specific scientific disciplines and in models of convergence, is a hypothesis that deserves further research.

Cross-References

- Complexity
- Determinism
- Novelty
- Possible Worlds

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Possible in John Dewey

► American Pragmatism

Possible in Logic

François Schmitz

Université de Nantes, Nantes, France

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Introduction

The first aim of logic, since Aristotle, is to establish what are the valid *inferences*, that is to say, in what circumstances a proposition “necessarily” follows from other propositions. To take a very simple example, it can be said that from the two propositions (premises) “if it’s raining, the grass grows” and “it is raining,” the proposition (conclusion) “the grass grows” necessarily follows. But this can also be expressed as: It is “impossible” for the two premises to be true and to the conclusion to be false. Here appears the two notions of *necessity* and *impossibility* which are “alethic” modalities. But it seems that there is still no room for a third notion, that of “possibility.” So the question is: Is possibility a logical notion? It will be shown that the answer is: no.

Standard Propositional Logic

As it is now usual, logic takes the form of a calculus in a formal language. This formal language has a very simple grammar. The simplest part of logic is the “propositional calculus” (PC), and it is sufficient for what will be said in this chapter.

The “vocabulary” of the language for this calculus is composed of the following:

- A (countable infinite) set P of *proposition letters*, $p_1, p_2, \dots, p_n, \dots$, which are supposed to represent “elementary” propositions, that is to say propositions that cannot be analyzed into other propositions, for example, “the cat is on the mat.”
- A set of *propositional connectives*; the most usual ones are the negation, $\sim$, the conjunction, $\wedge$, the disjunction, $\vee$, the implication, $\Rightarrow$, and the bi-implication, $\Leftrightarrow$.
- A set of “improper” symbols: brackets, square brackets, braces, etc.

The *rules of formation*, which define the well-formed formulas (wff) of the language, are as follows:

- A propositional letter alone is a wff.
- If ϕ et ψ are wff, so are $\sim\phi$, $\phi \wedge \psi$, $\phi \vee \psi$, $\phi \Rightarrow \psi$ and $\phi \Leftrightarrow \psi$.

As only the semantics of this language is of interest in this chapter, it is not required to present the “rules of inference” (but the reader will be supposed to be familiar with the notion of an axiomatic system). The semantical properties of the connectives are the following:

- A negation $\sim\phi$ is true if, and only if (iff), ϕ is false.
- A conjunction $\phi \wedge \psi$ is true iff ϕ and ψ are true.
- A disjunction $\phi \vee \psi$ is false, iff ϕ and ψ are false (it is the inclusive “or”: Both propositions can be true).
- An implication $\phi \Rightarrow \psi$ is false iff ϕ is true and ψ is false (ϕ is called the *antecedent* of the implication, ψ its *consequent*).
- A bi-implication $\phi \Leftrightarrow \psi$ is true iff ϕ and ψ are both true or both false.

An important theorem will be admitted in the following: $\phi \Rightarrow \psi$ is a logical truth (a tautology) iff the inference from ϕ to ψ is valid. As all the formulas of the language can be transformed into implications, the aim of the propositional calculus is to show what are the tautologies.

In our example above, there are two elementary propositions only: “it is raining” and “the

grass grows.” The inference corresponds to the implication: $[(\text{it is raining} \Rightarrow \text{the grass grows}) \wedge \text{it is raining}] \Rightarrow \text{the grass grows}$. It can easily be shown that this proposition is logically true (is necessarily true). Suppose first that the two members of the conjunction in the antecedent are true, then the antecedent of the implication “it is raining $\Rightarrow$ the grass grows” is true (it is the second member of the conjunction), and so, by definition of “ $\Rightarrow$ ”, the consequent (“the grass grows”) must be equally true, but this consequent is precisely the consequent of the principal implication. Thus, the two members of the principal implication are true, which means that the whole proposition is true. If, on the other hand, one of the two members of the conjunction in the antecedent were false, the conjunction would be false and so the whole proposition would be true.

Now, can this proposition be false? For it to be false means that the antecedent of the principal implication is true, and the consequent false. But it has just been shown that this cannot be the case, so it is impossible for the whole proposition to be false, and it can only be true: It is necessarily true. All the propositions of logic (tautologies) are necessary truths and their negation necessary falsehoods.

The semantical approach gives a precise meaning to those notions. Two fundamental theses of PC are here presupposed. (1) The elementary propositions are logically independent of each other, i.e., an elementary proposition is true or false independently of the truth or falsity of any other elementary proposition. (2) The truth-value of a “molecular” proposition ϕ is uniquely determined by the truth-values of the elementary propositions occurring in ϕ (the propositional connectives are said to be “truth-functional”).

Returning to the formal language, an “interpretation” of the proposition letters must be given that is to say a function i from the set P to the two-elements set $\{T(\text{true}), F(\text{false})\}$ ($i: P \rightarrow \{V, F\}$). Then, given an interpretation i , it is possible to calculate the truth-value of a molecular formula ϕ for i because: first, a formula is always of finite length; second, only the values given by i to the proposition letters in ϕ are to be taken into account in virtue of the thesis of the logical

independence of the elementary propositions; and third, the result is uniquely determined by *i* in virtue of the truth-functionality of the connectives.

Thus, if *n* different proposition letters occur in a formula ϕ , there is only 2^n different interpretations for the *n* proposition letters, and this makes possible to check whether ϕ is true for all, for none, or for some of those interpretations. There are various methods to do this, the simplest one being that of the “truth-tables.” For example, let ϕ be: $[(p_1 \Rightarrow p_2) \wedge \sim p_1] \Rightarrow \sim p_2$, and ψ (which corresponds to our example above): $[(p_1 \Rightarrow p_2) \wedge p_1] \Rightarrow p_2$. As the same two proposition letters occur in those two formulas, there are only four (2^2) relevant interpretations for the two formulas; the truth-tables for ϕ and ψ take the following form:

		φ										ψ					
		p_1	p_2	$[(p_1 \Rightarrow p_2) \wedge \neg p_1] \Rightarrow \neg p_2$								$[(p_1 \Rightarrow p_2) \wedge p_1] \Rightarrow p_2$					
1	T	T			T	F	F	T	F			T	T	T	T		
2	T	F		F	F	F	T	T				F	F	T	T	F	
3	F	T		T	T	T	F	F				T	F	F	T	T	
4	F	F		T	T	T	T					T	F	F	T	F	

Under p_1 and p_2 , on the left, are the four relevant interpretations for ϕ and ψ . To each of these interpretations corresponds an infinite set of different interpretations $i: P \rightarrow \{T, F\}$, which all coincide on p_1 and p_2 . It is easy to see how the truth-values of ϕ and ψ are calculated given the interpretations of p_1 and p_2 .

ψ is true for all the interpretations, as it was expected from the informal discussion of this formula. As there are no other relevant interpretations for ψ , ψ cannot be false; it is necessarily true and its negation is necessarily false (it is an “impossible truth,” a contradiction).

On the other hand, ϕ is false for the third interpretation, so it is not a tautology (it is not a necessary truth), but it is true for the other three interpretations, so it is not a contradiction. Being neither necessary nor impossible, it is *contingent*.

In the formal language for PC, there are, thus, from a semantical point of view, three kinds of formulas: the *tautologies* (necessary truths), the *contradictions* (impossible truths), and, in the middle, the *contingent* truths (which are also contingent falsehoods):

It is raining or it is not raining	The cat is on the mat or is eating	It is raining and it is not raining
Necessary	Contingent	Contradictory/impossible

It must be noticed that all the proposition letters represent contingent (elementary) propositions, since for each proposition letter p_i there are two interpretations: $i(p_i) = T$ and $i'(p_i) = F$. That is to say: All the elementary propositions are contingent; it is a corollary of the thesis of the logical independence of the elementary propositions.

And now comes the question: What about of the *possible*? One is tempted to think that the true meaning of the possible is *contingency*: When it is said that it is possible for John to come, it is presupposed that it is also possible for him not to come. When the police try to find the murderer of a woman, it suspects, for example, her husband and her lover: It is possible, but not necessary, that the murderer was her husband (for he is known to be a jealous man), but it is as well possible, but not necessary, that the murderer was her lover (for he is known to be a violent man), and so on. . . And when the murderer has been discovered, say the lover, nobody would say that “the lover is the murderer” is a necessary proposition: It is true but not necessary, so it is a contingent proposition. Thus, it is not surprising that this meaning was the first Aristotle considered at the beginning of his investigations about the modalities (cf. *An. Prior*, 8, 29b 30, 13, 32a 32).

Yet, this meaning has not been retained by the logician. Traditionally, the possible has been defined as the noncontradictory (Leibniz: “*Possibilia sunt quae non implicant contradictionem*”). Thus the “possible” covers the contingent *and* the necessary:

It is raining or it is not raining	The cat is on the mat, or it is eating	It is raining and it is not raining
Necessary	Contingent	Contradictory/impossible
Possible		

In an axiomatic system for the calculus of propositions, the only propositions that can be proved and the only that can appear in the system are the necessary ones; admittedly, they can be

said to be “possible,” but it is not their possibility which is of interest. Their possibility is only a useless by-product of their necessity. In the semantical treatment of the calculus of propositions, as above, a distinction can be made between the contingent and the necessary, but to show that a formula is “contingent” is only a way of showing that it is *not* a tautology.

The idiom of the necessity, impossibility, etc. belongs to the commentaries *about* the formulas of the formal language, but instead of speaking of the necessity (impossibility) of a proposition represented by a formula, it would be as well to speak of a proposition represented by a formula proved in the axiomatic system, or true for all interpretations. Thus, the modal idiom may seem useless.

Nevertheless, this idiom is not completely deprived of interest. For it can be said that the negation of a necessary proposition is a contradiction (is impossible), or that the negation of a contradiction is at least possible. Thus, there are some simple “logical” relations between the three notions of necessity, impossibility, and possibility which can be represented by the traditional “square of opposition”:

Not possible that not- φ Impossible that not- φ Necessary that φ	Contrary	Not possible that φ Impossible that φ Necessary that not- φ
↓ Subaltern	↖ contradictory ↗ ↙ ↘	↓ Subaltern
Possible that φ Not impossible that φ Not necessary that not φ	Subcontrary	Possible that not- φ Not impossible that φ Not necessary that φ

From this “square of opposition,” it appears that there is a simple relation between the possible and the necessary that can be expressed using negation alone: “It is necessary that φ ” is equivalent to “it is not possible that not- φ ” and “it is possible that φ ” is equivalent to “it is not necessary that not- φ .” In the sequel, the following symbols will be used for these modalities: $\Box\varphi$

$\rightarrow$ “it is necessary that φ ”; $\Diamond\varphi \rightarrow$ “it is possible that φ ” (φ is called the *dictum*). Thus, each one of these two modalities can be defined with the aid of the other and the negation: $\Box\varphi \stackrel{\text{def}}{=} \sim\Diamond\sim\varphi$ or $\Diamond\varphi \stackrel{\text{def}}{=} \sim\Box\sim\varphi$. It is easy to see that these definitions lead to the bi-implications (on the right column of the square above): $\sim\Box\varphi \Leftrightarrow \Diamond\sim\varphi$ and $\Box\sim\varphi \Leftrightarrow \sim\Diamond\varphi$.

On the other hand – and this explains why the possible has been distinguished from the contingent – there are not so simple relations between the contingent and the other modalities, since “ φ is contingent” is equivalent to $\sim\Box\varphi \wedge \Diamond\varphi$. Thus, “ φ is contingent” implies that “ $\sim\varphi$ is contingent” since $\sim\Box\sim\varphi \wedge \Diamond\sim\varphi$ is equivalent, by definition, to $\Diamond\varphi \wedge \sim\Box\varphi$, and from “ φ is not contingent” nothing determinate follows since this can mean *either* $\Box\varphi$ *or* $\sim\Diamond\varphi$.

On this basis, Aristotle already tried to build a “modal logic”, which was, to be sure, rather confused, but in the last century this logic has been developed more rigorously, even if it has been severely criticized by some logicians.

Modal (Propositional) Logic (MPC)

MPC is an extension of PC. So the formal apparatus of the MPC is simple: It is the formal language of PC to which the two symbols for the modalities, $\Box$ and $\Diamond$, are added (but one of them is sufficient; the other may be introduced by definition). To the rules of formation of the language for PC are added the two rules:

- If φ is a wwf, then $\Box\varphi$ is wwf.
- If φ is a wwf, then $\Diamond\varphi$ is wwf.

Those modal operators do not behave semantically like the propositional connectives since they are not “truth-functional”: If φ is true, the truth-value of $\Box\varphi$ is not determinate: it may be true as well as false, and if φ is false, the truth-value of $\Diamond\varphi$ is no more determinate: it may be false as well as true. Thus, the fundamental principle (2) above of PC is not satisfied; in other words: It does not suffice to give an interpretation of the propositional letters occurring in a modal

formula, to be able to calculate the truth-value of this modal formula.

From this, it follows that neither truth-tables nor any other method, available in propositional logic, can be used to ascertain whether a modal wwf is a modal logical truth or not, that is to say: There is no fixed set of modal logical truths, while there is a fixed set of PC-tautologies.

At the beginning of the revival of the modal logic (in the years 1920–1930), some logicians – the most famous being C. I. Lewis – tried to overcome this difficulty by building various axiomatic systems for MPC, in view of testing the plausibility of a modal proposition by taking into consideration its logical consequences. But which modal propositions may be taken as axioms? There are various candidates. The most obvious is one which had been stated by Diodore (end of the fourth, beginning of the third century BC) in his famous “Master Argument”: $\Box(\varphi \Rightarrow \psi) \Rightarrow (\Box\varphi \Rightarrow \Box\psi)$. All the “normal” systems of modal logic include this axiom, which is called **K**.

The other candidates are more or less evident. One which is quasi, as obvious as **K**, states that a necessary truth is, *a fortiori*, true: $\Box\varphi \Rightarrow \varphi$ (called **T**). If $\sim\varphi$ is substituted for φ , this is equivalent, by contraposition, to: $\varphi \Rightarrow \Diamond\varphi$, which is an old principle already admitted by Aristotle or Leibniz, for example (“Tout ce qui est actuel peut être considéré comme possible” Letter to A. Arnauld, 1686/7/4, p. 120). Another one, more problematic, is: $\Box\varphi \Rightarrow \Box\Box\varphi$ (called **4**), that is to say: What is necessary is necessarily necessary. For example, Descartes thought that the necessary truths (for us), like $7 + 5 = 12$, are free creations of God which means that God would have been susceptible to change his mind and to decide that $7 + 5 = 11$. For Leibniz, on the contrary, the necessary truths are also necessary for God.

Two other principles are also traditionally studied: $\varphi \Rightarrow \Box\Diamond\varphi$ (**B**) and $\Diamond\varphi \Rightarrow \Box\Diamond\varphi$ (**5**).

Different combinations of those principles result in different systems of modal logic; the most current are as follows:

- The system *K*: **K** alone
- The system *T*: **K+T**
- The system *S4*: **K+T+4**

- The system *B*: **K+T+B**
- The system *S5*: **K+T+5**, or **K+T+4+B**

It is said that a system is stronger than another, when all the theorems of the second are also theorem of the first. This relation between the modal systems can be represented like this:

$$K \rightarrow T \begin{matrix} \nearrow^{S4} \\ \searrow^B \end{matrix} S5 \quad (“K \rightarrow T”: T \text{ is stronger than } K, \text{ etc.})$$

As MPC is an extension of PC, all the tautologies of PC are logical truths of MPC and can be taken as axioms. Furthermore, in those axiomatic systems, one the rules of inference is the *rule of necessitation*: If φ is a theorem, then $\Box\varphi$ is a theorem of MPC. Thus, if φ is a tautology, $\Box\varphi$ is a theorem of MPC, as it was expected.

Each one of those systems is consistent, and there is no *logical* reason to adopt one of them rather than any other. But for semantical reasons which will be expounded below, most of the philosophers prefer the system *S5*.

Nevertheless, all those systems share an important feature: *All* the theorems of MPC are transformed into tautologies of PC by deleting all the modal operators in the MPC-theorems (this can be easily proved). This can be illustrated by the case of the axioms above: **K** is transformed into $(\varphi \Rightarrow \varphi) \Rightarrow (\varphi \Rightarrow \varphi)$, and for the other axioms, their propositional transform is always $\varphi \Rightarrow \varphi$. It is clear that these PC-formulas are tautological. From this, it follows that if a PC-formula φ is possible but nonnecessary, i.e., *contingent*, $\Diamond\varphi$ is of course well formed, but cannot be a theorem in MPC since its propositional transform is not a tautology. Thus, if φ is a wwf of PC, the only formulas of the form $\Diamond\varphi$ that can be MPC-theorems are those in which φ is a tautology of PC.

All this can be seen more perspicuously if a semantical point of view is adopted. The semantics for MPC has been elaborated in the years 1950–1960 by logicians such as Kripke or Hintikka. It finds its inspiration in the leibnizian idea of the existence in the mind of God of an infinity of *possible worlds*. But there is a less theological and more logical origin of this idea:

As it has been said, the formal language for PC contains an infinite set of propositional letters; these letters must be interpreted in order to evaluate a given formula for a given interpretation. Each interpretation gives to the propositional letters the value true or the value false; thus, to each interpretation corresponds a “world” in which all the formulas interpreted as true represent existing states of affairs in this “world,” and, conversely, all the formulas interpreted as false represent non-existing states of affairs in the same “world.” Obviously, as a tautology is true for all interpretations, it is true in every “world.”

It is clear that this idea must be more elaborated to fit the diversity of the MPC-systems and the fact that the modal operators are not “truth-functional.” The core of the semantics for MPC is that only some worlds are *accessible* from a given world (or that a world can *see* only some worlds). Consequently, the evaluation of a modal formula is more complicated than that of a PC-formula. It is necessary to fix: first, a set W , finite or infinite, of “worlds” $w_1, w_2, \dots$; second, a relation R between these worlds such that if $w_i R w_j$ then w_j is *accessible* from w_i (or w_i *sees* w_j); and third, the interpretation of the propositional letters in each world belonging to W , that is to say a function i from P to $\wp(W)$ ($\wp(W)$ is the set of the subsets of W); intuitively, $i(p_i)$ is the subset of W such that p_i is true in each world belonging to this subset.

So, a *model* for MPC is a triplet: $M = \langle W, R, i \rangle$. In each world, a PC-formula is evaluated as usual in PC (truth-table). But the evaluation of an MPC-formula in a world requires two new rules for the modalities:

- $\Box\phi$ is true in the world w_i iff, for every world w_j such that $w_i R w_j$, ϕ is true in w_j .
- $\Diamond\phi$ is true in the world w_i iff, for at least one world w_j such that $w_i R w_j$, ϕ is true in w_j .

An MPC-formula ϕ is *valid in a model* M iff it is true in all the worlds belonging to W . In this case, M is said to be a model for ϕ . But this is not sufficient: ϕ may be invalid in a different model $M' = \langle W, R, i' \rangle$, that is to say ϕ may be false in at least one world in W for an interpretation $i' \neq i$.

$\langle W, R \rangle$, where W and R are supposed fixed, is called a *frame*. To get a model, it is necessary to fix an interpretation; if this is done, it is said that the model obtained is *based on* the frame $\langle W, R \rangle$. Thus, there are as many models based on $\langle W, R \rangle$ as there are different interpretations of the propositional letters. An MPC-formula is said to be *valid in a frame* iff it is valid in all models based on the frame.

But this is not the end of the story. In general, a relation R , defined on a domain, may have some *formal* properties; for example, it may be *reflexive*, that is to say each element of the domain has the relation R to itself; it may be *transitive*: if xRy and yRz , then xRz , for all x, y, z belonging to the domain. It may be *symmetric*: if xRy then yRx , for all x, y belonging to the domain. When a relation has these three properties, it is said to be an *equivalence relation*.

Now, the set of worlds in a frame and the interpretations may vary and the relation may have some of the properties above. For example, let the relation R be reflexive. The *class of reflexive frames* is the class of frames in which the relation is reflexive, regardless of the set W and the interpretation i . *Idem* for the class of transitive frames and the class of symmetric frames.

An MPC-formula is *valid in a class of frames* C , if it is valid in all the frames belonging to C . The main result proved by logicians like Kripke is that a determinate class of frames corresponds to each of the systems above, that is to say: A formula is a theorem in one the system, iff it is valid in its corresponding class of frames. This sheds some light on the nature of those systems.

To the system K , corresponds the class of all frames, so the properties of the relation are indifferent.

To the system T , corresponds the class of reflexive frames; to the system $S4$, the class of reflexive and transitive frames; to the system B , the class of reflexive and symmetric frames; and to the system $S5$, the class of reflexive, symmetric, and transitive frames, that is to say the class of frames in which the relation is an equivalence relation.

For sake of simplicity, but without loss of generality, it can be assumed that in the models

for *S5*, each world “sees” every world belonging to the sets *W* of these models (in this case, *R* is said to be *universal* in its domain). This is why the *S5*-models are more akin to the Leibnizian idea than are the models for the other systems and why this system is frequently favored by philosophers. Nevertheless, it must be remembered that there is a plurality of *S5*-models, and this is not leibnizian, since, for Leibniz, God sees every possible world so that there is only one model for him.

It has been said above that in no system, a formula of the form $\Diamond\varphi$, where φ is a PC-contingent, can be a theorem. This can be made more intuitive by considering the *S5*-models (as *S5* is the strongest system, the following holds equally for the other systems). To show that a formula of this form is not valid in the class of the *S5*-models, it is sufficient to show that it is not valid in one *S5*-model. This is possible because, as φ is PC-contingent, it is always possible to define an interpretation *j* such that φ is false in every world in the model $M = \langle W, R, j \rangle$. For example, let φ be $p_i \Rightarrow p_j$ which is false for an interpretation *i* iff $i(p_i) = T$ and $i(p_j) = F$. Then *j* can be so defined that $j(p_i) = W$ and $j(p_j) = \emptyset$. That is to say, p_i is true for *j* in every world, and p_j is true in no world (i.e., false in every world). Thus, for *j*, $p_i \Rightarrow p_j$ is false in every world, and, as each world in *W* can see every world, no world can see a world in which $p_i \Rightarrow p_j$ is true, so $\Diamond\varphi$ is false in every world.

Another example is as follows: Let φ be $p_i \wedge p_j$ which is false for an interpretation *i* iff $i(p_i) = F$ or $i(p_j) = F$. Then *j* can be so defined that $j(p_i) \cap j(-p_j) = \emptyset$. That is to say, p_i is true for *j* in all the worlds in which p_j is false, and conversely. Thus, $p_i \wedge p_j$ is false for *j* in every world in *W*, etc. (see above).

Of course, in other *S5*-models, those same formulas can be valid, but no model can “see” another model. Thus, if φ is not valid in a model *M*, but valid in a model *M'*, the nonvalidity of φ in *M* is not affected by the validity of φ in *M'*. On the other hand, if there were only one model, if all the possible worlds corresponding to the different interpretations of the propositional letters were in the set of worlds of this model, and if the relation *R* of this unique model were universal,

then all the formulas of the form $\Diamond\varphi$, φ representing a possible but non-necessary proposition, would be true in all the worlds. R. Carnap devised such a semantics, but, unfortunately, it appears that it cannot give rise to a satisfactory logic.

Thus, between the necessary and the contingent (possible but non-necessary) there is an asymmetry in MPC: As it has been said, if φ is a tautology (necessary proposition) of PC, $\Box\varphi$ is an MPC-logical truth; on the contrary, if φ is a possible but non-necessary proposition in PC, $\Diamond\varphi$ is *not* an MPC-logical truth.

This asymmetry reveals something important: The fact that a proposition is possible but not necessary is *not* a logical property of the proposition. A proposition is a tautology in virtue of its *form* alone, which means that it is possible, in the formal language for PC, to substitute uniformly for each proposition letter in a tautology any formula, the result remaining always a tautology. On the contrary, in a possible but non-necessary formula, this operation may lead to a contradiction or to a tautology. It is this fact which makes it possible to define a *S5*-model in which a formula representing a contingent proposition is false in every world. Thus, contingency is not a *formal* property of a contingent proposition, so it cannot be logically determined whether a proposition is possible but non-necessary.

In more philosophical terms, this means that what is possible but non-necessary could be either always actual or never actual; this is just a question of fact, not of logic.

Conclusion

It may be objected that in MPC a lot of laws involve the operator of possibility, starting with the axioms **B** and **5**. It is easy to see that this objection is not justified.

In general, MPC may be described as the study of the interactions of the modalities in the tautologies of PC. Nevertheless, this cannot lead to change something to the previous remarks. For example, let φ be $\Diamond(p_1 \wedge \sim\Box p_2) \Rightarrow \Diamond(\Diamond p_1 \wedge \sim p_2)$ which is *S5*-valid. Thus if the antecedent of this

implication is true, necessarily, the consequent is true: The inference from the antecedent to the consequent is valid. But the antecedent could be false: It is sufficient to consider a *S5*-model such that $i(p_1) = \emptyset$. So $p_1 \wedge \sim \Box p_2$ is false in all the worlds of this model, and consequently $\Diamond(p_1 \wedge \sim \Box p_2)$ is also false in all the worlds: $\Diamond(p_1 \wedge \sim \Box p_2)$ is not *S5*-valid. To be sure, the implication is valid in this model, but the consequent $\Diamond(\Diamond p_1 \wedge \sim p_2)$ cannot be valid in *S5*, since the antecedent of the implication is not valid. In other words: Neither the antecedent nor the consequent is valid.

This may be generalized and is just a manner to encounter again what had been established above.

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Possible in Management

Joel T. Schmidt and Christian H. Werner
Institute for Creativity and Innovation,
Hochschule für angewandtes Management
GmbH, Ismaning, Germany

Abstract

This entry explores the transformative power of the “possible” in the field of business and management by using digital transformation as an overarching framework. Given the rapid advancement of technology and its impact on

business innovations, including both internal processes at all levels of operation and external processes enabling business transactions with customers and partners, digitalization elements are drivers of change and cannot be left out of any considerations of future potential or possibilities. This entry examines how digitalization is changing organizational structures and how agile management methods are used to manage innovation. It provides an overview of business models which are possible within digital business environments, including digital marketplaces and platforms, as well as models that can be used in open innovation. Finally, the entry identifies contradictory tensions inherent to innovation processes in digital transformation and how the management of paradoxes enables organizations to create their own possible futures.

Keywords

Digital transformation · Innovation management · Digital business models · Agile methods · Open innovation · Paradox mindset

Introduction

It's the end of the world as we know it ... (R.E.M. 1987)

Considering the transformative power of the “possible” within the context of business and management, other words and synonyms spring to mind: potential, achievable, doable. At a closer look, the meaning of possible, the definition includes the aspect of a conditional future, which may (or may not) occur depending on the right conditions (Merriam-Webster [n.d.](#)). Limitations often inhibit the realization of possibilities, changing dreams and aspirations into the disappointing reality of impossibility. Both sides of the coin need to be considered in the context of business and management, for it is this inherent ambivalence that opens the door to explore the arena of business innovation, creativity, and its management. The rise and fall of entrepreneurs, the innumerable iterations of new product design, the windows of opportunity

presenting themselves during times of instability and economic downturn, or the massive impact of changes currently occurring in response to transformation processes in the paradigm shift from mechanical to digital. As the lyrics of the R.E.M (1987) song so aptly put it, the world is indeed ending as we know it, but possibilities abound. Under the backdrop of digital transformation, the possible in business and management is presented in this entry as it is impossible to separate digital from the future.

Although digital transformation provides a future framework for what is possible in business and management, it is at once both complex and unclear. Given the incredibly fast pace of technological change in this context, existing management theories and models are rapidly becoming obsolete, ineffective, or simply inefficient, as the rules of the game are changing (Harwardt and Schmutte 2020). The common practice of companies and managers to evaluate actions in Drucker's (2009, p. 2) terms of what is efficient (doing things right) and effective (doing the right things) is intensified with the speed and disruptive nature of digital change. The need for constant awareness and analysis of the future forces companies to engage in strategic management, which according to Macharzina (1999) means the proactive creation of the future (as cited in Schwarz 2008, p. 239).

Recognizing the need for creativity and innovation as companies create the future, it is important to adopt an integrated approach going beyond the dichotomy of ideation (creativity) and implementation (innovation). Tang (2017) encourages managers to view creativity as a driving force over the entire innovation process, with repeating cycles of creative ideation occurring until implementation is achieved. The key to success in this approach is managing the processes effectively recognizing the distinguishing characteristics of creativity (novelty and originality) and innovation (practicality and effectiveness), and finding a balance using both to overcome the limitations and constraints of creativity (personal and intra-individual) and innovation (social and inter-individual) (Werner and Tang 2017).

Digital = Agile

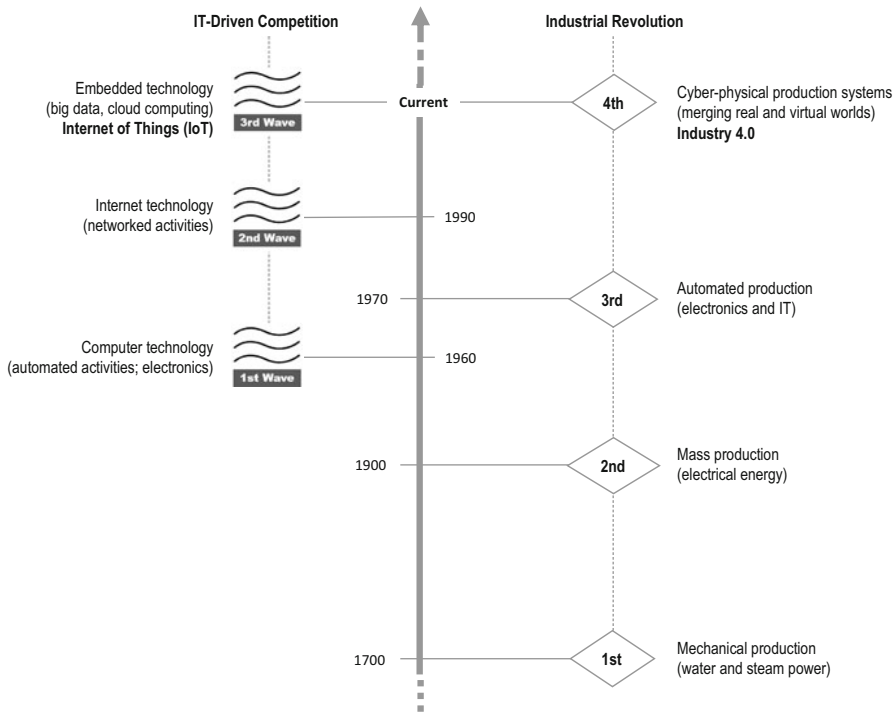
Understanding what is possible for the future also requires awareness of the present and analysis of the past. The phases of technological change driving digital transformation are presented in Fig. 1, which integrates two common frameworks: the German/European framework from manufacturing termed Industry 4.0, and its American equivalent termed Internet of Things (IoT). Both frameworks illustrate the current phase of digital transformation within an historical context.

Schlöpfer and colleagues from Deloitte (2015) depict Industry 4.0 as part of a series of technological revolutions over time, starting with steam-power. With each revolution, the achievable output of new products surges forward, surpassing the limits of what was possible in the past, leading to new innovations and potential for further development in the future.

The three waves of IT-driven competition described by Porter et al. (2014, 2015) show the development of electronics and computer technology, culminating with IoT. Each wave represents the technological changes in terms of product features, functionality and capability. It is important to consider how the competitive business environment is impacted by technology, as management decisions involve knowledge and understanding of internal potential for innovation (production), and sensitivity for what is achievable in the external marketplace where products and services are sold and distributed in ways which are distinguished from other players in the field (competition).

Agile Organizations

The possibilities resulting from digital transformation demand new structures for management, control and performance, yet businesses are changing more slowly than technology. As the gap between the potential for profit offered by technological advancement and the actual real performance or productivity of businesses exponentially increases (Bersin et al. 2017b), it becomes clear that the real problem is not technical, but rather organizational, in terms of how organizations use human capital, or "how



Possible in Management, Fig. 1 Timeline of industrial revolution and IT-driven competition. (Adapted from Schlöpfer et al. 2015; Porter et al. 2014, 2015)

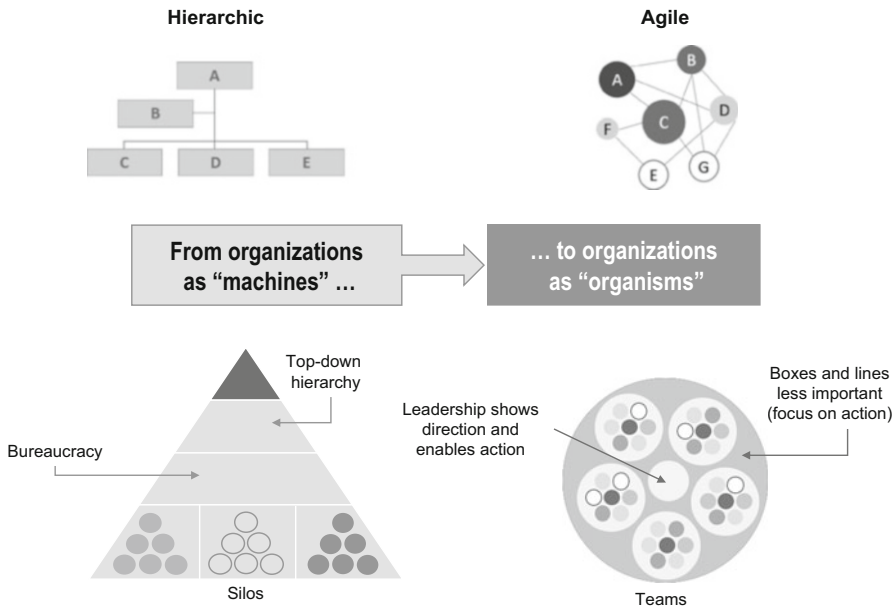
businesses organize, manage, develop and align people at work” (p. 3). A response to this challenge is the shift to agile processes with a stronger focus on personal commitment, the ability to think creatively and to solve problems independently, rather than remaining entrenched in the routine processes of fixed hierarchical structures (Mohr 2020). Digital technologies are utilized in business processes, such as software-supported project management including task assignment and coordination and real-time communication, as they further reduce the need for hierarchical structures and enable flatter hierarchies and decentralized project teams without losing clarity or control. Organizations with flat hierarchies have the potential to be more effective and faster than traditional organizational systems, but there is no guarantee.

The transition from hierarchical to agile organizational structures is illustrated in Fig. 2 by integrating concepts from two studies by leading consulting companies, Deloitte and McKinsey &

Company. The top part of the figure is based on Bersin et al. (2017a) from Deloitte, illustrating how the linear, rigid structure of hierarchies used by traditional companies in the past are incompatible with the demands of current business contexts, which require dynamic, flat and agile structures to effectively compete in fast and complex environments. Features of organizations as “machines”, with traditional hierarchies include top-down processes and high levels of bureaucracy result in departmental structures referred to as “silos”. In contrary, agile organizations as “organisms” operate in heterogeneous teams stimulating interaction that is fluid and non-linear, with leadership that facilitates rather than controls, enabling action and providing feedback and direction.

Agile Methods

Agile methods are also important for individuals and teams in terms of the changing demands of collaboration and optimal functionality regarding



Possible in Management, Fig. 2 Transformation of organizations. (Based on Bersin et al. 2017a; Aghina et al. 2018)

preconditions and requisite skillsets relating to the demands of digitalization for rapid and complex responses (Lipowsky and Schmidt 2016) (see also ► “Collaborative Creativity”). Two well-established agile methods invented by Schwaber and Sutherland (2012, as cited in Lipowsky and Schmidt 2016) are *Scrum* and *sprints*. *Scrum* increases the effectiveness and performance of teams dividing critical roles and responsibilities among team members. Using Scrum gives autonomy and freedom to the team as the tasks describe “only the desired outcome (what), not the way it is to be carried out (how)” (p. 267). *Sprints* represent a series of short iterations for software development where each sprint culminates a presentation of current results, followed by immediate planning for the next sprint. These short phases of development, outcomes and reflection provide flexibility to make ongoing changes and improvements. In this way the innovation process of software development is enabled as a creative process where “experiments and failure are necessary parts of the process” (Lipowsky and Schmidt 2016, p. 268). These examples of agile methods (see also ► “Design Thinking”) help to illustrate how organizations can function as an organism, a

living entity, where its members are essential to the system, requiring self-organization, responsibility and continuous improvement.

Digital Business Models

Recognizing the potential for profit offered by digital transformation means understanding what is possible, in terms of new digital business models. “The essence of a business model is that it crystallizes customer needs and ability to pay, defines the manner by which the business enterprise responds to and delivers value to customers, entices customers to pay for value, and converts those payments to profit through the proper design and operation of the various elements of the value chain” (Teece 2010, p. 191).

Three possible areas of activity helping companies to benefit and profit from digital technology (Deiser 2018, p. 12) are presented in Fig. 3, including saving (by optimizing efficiency and effectiveness; making more money (by improvement of existing products); and making new money (by creation of new revenue opportunities). The third area is where digital transformation can have the

AREAS OF DIGITAL TRANSFORMATION	FEATURES AND DESCRIPTION			
	Role of Digital Technology	Business Impact	Type of Change	Impact on Operating Model
Save Money	Improve processes	Cost convenience	Incremental (mainly organization related)	Low
Make MORE Money	Enhance products and services	Growth within current paradigm	Incremental (mainly market related)	Medium
Make NEW Money	Create new markets	Disruptive business models	Radical (market and organization related)	High

Possible in Management, Fig. 3 Areas of digital transformation. (Adapted from Deiser 2018, p. 12)

most impact and where companies can generate the most possible profit. However, there is no guarantee of competitive advantage (Teece 2010), given the transparency of business models, which make them vulnerable to imitation.

The dynamic capabilities for business model innovation in a digital context are presented in Fig. 4. According to Rachinger et al. (2019), at the architectural level, business model innovation occurs in cycles of interaction moving through strategy (planning level) and process (implementation level), with the dynamic capabilities of value creation, value proposition, and value capture driving new developments for customers, in both immediate and possible futures. The value chain, as described here, are key elements for business model success (Teece and Linden 2017; Teece 2018), as proposition of value integrates products and services, customer needs, and geography, while value capture incorporates the revenue model (pricing logic, channels, customer interaction) and cost model (core assets and capabilities, core activities, partner network).

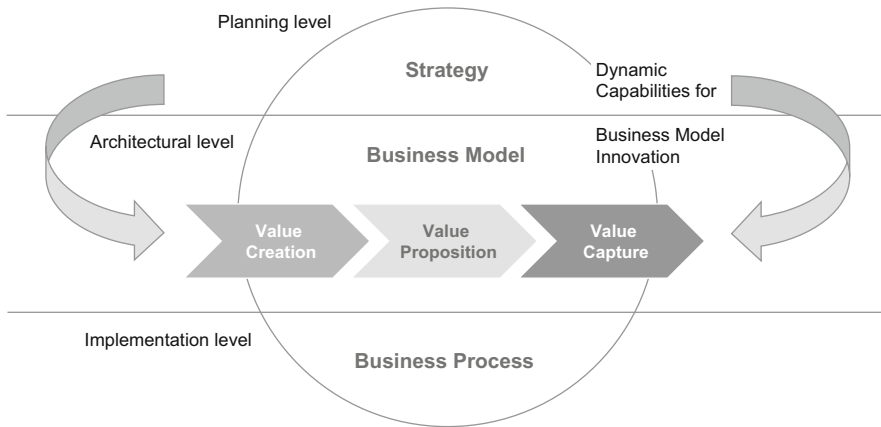
The interplay between strategy and business model innovation can be further understood by activities within the dynamic capabilities of an organization. According to Teece (2018), an organization's ability to engage in sensing (identifying opportunities), seizing (designing and refining business models, as well as resource commitment), and transforming (realigning organizational structure and culture) activities support

sustainable transformation, combining with strategic efforts to anticipate competitor reactions and defense of intellectual property (p. 44). Ongoing innovation of business models is a necessary part of organizational growth, as having the right business model shapes strategy and impacts its feasibility and possible realization in the future.

Digital Platforms and Shared Economy

Digital platforms are a good example of the digital transformation of business and business models and the shift toward future forms of sharing economy. Teece and Linden (2017) define platforms as “a combination of hardware and software that provides standards, interfaces, and rules that allow providers of complements to add value and interact with each other and/or users. Collectively, the platform innovator(s) and the complementors constitute an ecosystem that depends on continued innovation and maintenance of the platform by its owner(s) for success” (p. 10).

Inside this shared ecosystem, the technology of a digital platform enables shared economy or forms of sharing commerce. According to Kong et al. (2020) sharing commerce is “a Web-mediated consumer-to-consumer e-commerce business model where service providers transfer temporary possession of goods to customers for a fee or barter. Buyers and sellers are connected through a technology platform that has been tailored to feature social networking capabilities, handle



Possible in Management, Fig. 4 Dynamic capabilities for business model innovation. (Adapted from Rachinger et al. 2019)

transaction settlement and provide recourse” (Kong et al. 2020). In this way the digital platform provides the framework for the business model. Kong and co-authors describe as interactions between the *service enablers* (who provide the platform marketplace), *service providers* (who own and provide the rented asset), and *customers* (who need the service and are willing to pay for it).

In their description of digital platforms, Teece and Linden (2017) identify two basic types:

- Transaction platforms: facilitate exchanges between buyers and sellers who are not normally connected with each other (a classic example is eBay with its global platform that is easy to use)
- Innovation platforms: provide a base technology and distribution system to which other companies can add their own innovations, increasing the value for the system as a whole (p. 11). A few examples of this type of platform are the Apple “app” ecosystem, or also the computer ecosystem created by Microsoft.

Inherent to the success of both types of platforms is the inclusion of complementors or partners who must first accept the value proposition offered by the platform before it can succeed (Teece and Linden 2017). Exclusive distribution agreements with selected partners may help to

increase the added value, but often complementors participate actively in multiple platforms (p. 11). The risk of imitation exists, but with digital platforms, establishing a partner-base is central to success – simply creating or imitating platform technology is no guarantee.

Insights into the advantages of platform and sharing economy business models can be gained by examining the urban transportation provider Uber. In a comparison of Uber with traditional taxi business model, Teece (2018) identifies a few key features of Uber’s success (p. 43):

- GPS-navigation for drivers: provides predictable response time, enabling identification of the correct location (for both pickup and drop-off)
- Pre-approved credit: shortens the exit time from the vehicle and improves the experience for both customer and driver (and other motorists who may be impacted by the location of the parked vehicle)
- The Uber App: the software platform provides automated logistics integrating the activities and requests of drivers and customers – it is the central element of the Uber business model, since Uber retains control of pricing, not the drivers.

Uber is an excellent example of how successful platform business models are sustainable in terms

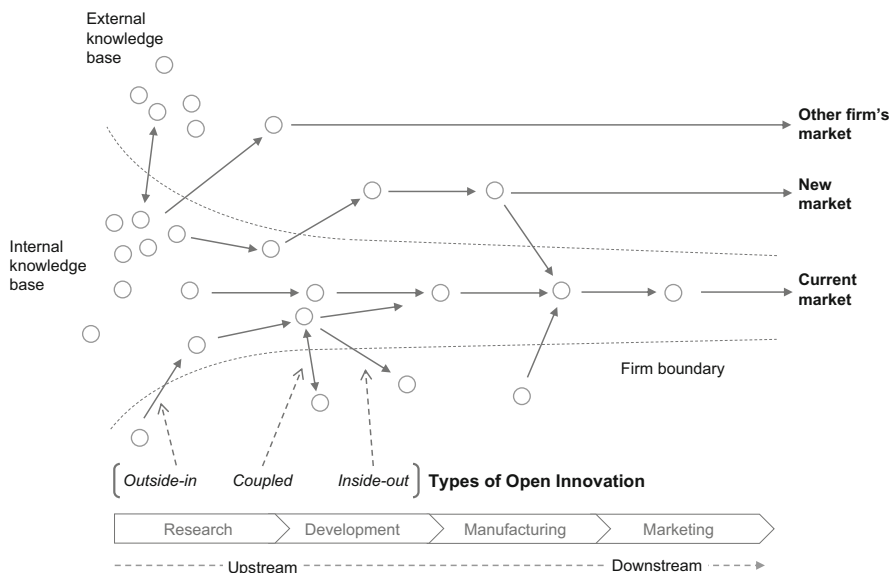
of the self-reinforcement that occurs as the user-base increases: “Uber brings the car services to the customer in such an improved manner that some customers see no need to own a car” (Teece 2018, p. 43). According to Teece and Linden (2017), selecting and refining a platform business model is a viable option for leveraging possible future profit and gain in the digital economy, since “companies do not go to market in isolation; in most cases, their products and services become more valuable to customers when combined with the products and services of other firms” (p. 13). Success of such combined and shared platforms of products and services is influenced by the management of trust, which is influenced in turn by social referrals, information quality and the safety of transactions (Kong et al. 2020).

Possible Business Models Using Open Innovation

The concept of open innovation is defined as “a distributed innovation process based on purposively managed knowledge flows across organizational boundaries” (Chesbrough and Bogers 2014, p. 17). These knowledge flows drive innovation as they are acted upon within the framework of an organization’s business model.

Different types of open innovation can be used based on the sources and directional flow of knowledge, including directional flows that are *outside-in* (flowing into the organization from an external knowledge base creating added value for internal processes), or directional flows that are *inside-out* (originating inside the organization flowing out creating added value through external commercialization processes), plus a third type representing *coupled* or bidirectional flows of external knowledge sources and internal commercialization activities. In this model, open innovation creates potential for added value by combining innovation and openness, where “innovation refers to the development and commercialization of new or improved products, processes, or services, while the openness aspect is represented by the knowledge flows across the permeable organizational boundary” (p. 17).

The model of open innovation presented in Fig. 5 offers a comprehensive overview of essential components and how they function in an organization. According to Chesbrough and Bogers (2014, p. 18), open innovation is not limited solely to one functional area of business activity, but can occur in all areas, from upstream research and development (R&D) toward downstream



Possible in Management, Fig. 5 The open innovation model. (Adapted from Chesbrough and Bogers 2014)

activities including manufacturing and marketing. It is important to consider “all activities from invention to commercialization in order to create and capture value from ideas and technologies” supporting business strategy and the effective use of business models to sustain competitive advantage in the current market, to recognize potential for entering and collaborating in other markets, and to create possibilities in new markets (see also ► “Possible in Economics”).

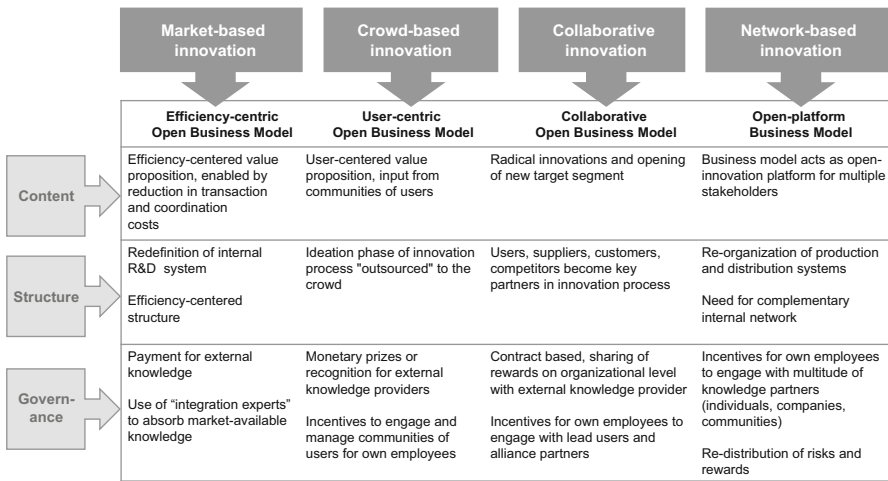
Open innovation provides many ways to support and influence business model development within digital transformation. Saebi and Foss (2015) provide examples of four different types of open business models (see Fig. 6), which can be distinguished from each other based on the dimensions of content (how organizational variables are configured), structure (how the company structures transactions with external stakeholders) and governance (the consequences of those configurations on company performance), as well as the depth and breadth of knowledge search within four distinct open innovation strategies (p. 207).

Business success and the future potential and possibilities of an organization are not solely achieved by innovation strategies, but by their combination with appropriate business models. According to Saebi and Foss (2015), not all open innovation strategies are alike, in terms of how much restructuring of business models is necessary, and finding a match is important, since

different degrees of openness are possible which impact the amount of “permeability to facilitate the in- and outflow of knowledge across organizational boundaries” (p. 210). Recognizing the wide range of possible business model options, empowers organizations to manage the future by actively influencing the outcomes of their innovation initiatives.

Dealing with (Im)possibility by Managing Paradoxes

Within the management of innovation, ambivalent or conflicting perspectives are common and even unavoidable, making balance hard to achieve. Recognizing these tensions as paradoxes helps leaders to manage realizations of the possible more effectively, minimizing the risk of failure or impossibility (see also ► “Risk”). Lewis (2000) developed a paradox framework for management that provides insight into paradoxical tensions which are cognitive or social constructs, reinforced in cycles of defensive reactions to the tensions, and which may be managed by conscious selection of either “acceptance, confrontation or transcendence” (p. 762). The goal is for managers to adopt a paradox mindset, which helps to recognize dichotomies and avoid the trap of unconsciously remaining in either/or contradictions. Management of innovation processes is



Possible in Management, Fig. 6 Four types of open business models. (Adapted from Saebi and Foss 2015)

paradoxical, as innovation demands ambidexterity in order to benefit from both sides of the paradox (Andriopoulos and Lewis 2010). The inherent tensions, conflict, and ambivalence experienced during innovation can lead to frustration and negative emotions inhibiting optimal performance, but by viewing tensions as paradox, managers are able to reduce anxiety, stress, and frustrations intensified by conflicting innovation demands, thereby fueling innovation and increasing the potential of better performance (see also ► “Design Thinking”).

Within the context of digital transformation, the paradoxical nature of innovation is intensified due to the rapid advancement of technology and change, increasing complexity of knowledge (difficulties in processing large amounts of incoming information and data in order to achieve understanding, integration and synthesis for business gain) and the distribution of business and management activities across the dimensions of time and space (engagement of employees and team members outside of local timeframes and geographies). Some example paradoxes include:

Exploitation Versus Exploration

- Exploration requires risk-taking and creation of cutting-edge innovation
- Exploitation requires specialization and efficient allocation of resources

Integration Versus Differentiation

- Integration refers to efforts to align processes and structures in linear formats, often hierarchical and vertical in nature (ease of organization)
- Differentiation refers to operation of self-governed peripheral units connected via horizontal collaboration and exchange (e.g., agile teams)

Freedom Versus Control

- Freedom refers to allowances given to identify emerging market and technological possibilities (no holds barred)

- Control refers to limitations imposed based on existing capabilities, capacities (e.g., manufacturing or distribution) or boundaries (e.g., budget).

Lewis (2000) suggests that the tensions experienced in paradoxical contradictions elicit reactions that accept, confront or transcend the paradox. Ongoing research in managing paradoxes conducted by Andriopoulos and Lewis (2010) encourage managers not to be inhibited or constrained by the tensions falling into the trap of either/or dilemmas in decision on which side to follow, but rather to use the paradox as a source of energy. According to the authors, it is not about “avoiding, fighting or even resolving tensions [...] as pulling too far to one side can prove counterproductive” (p. 106). It is about adopting a paradox mindset that supports finding a balance and developing a fluency with both alternatives, given the unique conditions and necessities of a situation (see ► “Creative Problem-Solving”; ► “Decision-Making”).

Conclusion

It's the end of the world as we know it . . . and I feel fine. (R.E.M. 1987)

Digital transformation represents massive potential for business to make possible futures a reality in terms of growth, performance and gain, but also the flipside of challenge, change, and transformation that can neither be fathomed, nor guaranteed, as digital transformation means changing mindsets resulting in a paradigm shift. Deiser (2018) describes the unavoidable shift “from a 20th century organizational paradigm (command, control, linear processes, silo mentality, stable business models, product orientation, clear industry boundaries, zero-sum game competition) to a new paradigm with participative self-organization, non-linear processes, cross-boundary collaboration, ongoing business model innovation, customer centricity, fuzzy industry boundaries, coopetition, and more” (p. 25). Achieving the possible through digital

transformation means engaging with and implementing new concepts and methods, such as flat hierarchies and alternative organizational structures, agile methods, innovative business models including digital platforms and other networked, collaborative models, as well as the integration of open and shared innovation processes. The possibilities identified in this entry begin with an assessment of what is possible now, but full realization of future potential means committing to an ongoing search for new ways to broaden the scope of the possible in management.

Returning to the initial quotation from R.E. M, which is in itself a paradox, although one that is filled with optimism, efficacy, and empowerment – the world may be ending (as we know it), but who can say what the future has in store, what tomorrow will bring, what is possible? Take a look around, analyze your strengths, weaknesses, and be open for collaboration, and for using the innovation from others to stimulate your own innovation. If there is a gap or problem, fix it, borrow it, make it, create it . . . it is possible.

Cross-References

- Collaborative Creativity
- Creative Problem-Solving
- Decision-Making
- Design Thinking
- Forecasting
- Possible in Economics
- Risk

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Possible in Neuroscience

Oshin Vartanian
University of Toronto, Toronto, ON, Canada

Abstract

Historically, human creativity has been associated with flexibility in thinking. Inherent in this view is the importance of the *dynamics* of

thought processes, rather than the stable dominance of any given thought process. In support of this view, there is growing evidence from neuroimaging to suggest that creativity emerges from the dynamic interaction of large-scale networks in the brain – each of which supports a different mode of thinking. Specifically, it appears that the default network (DN) supports spontaneous thought processes that underlie the generation of novel ideas in the mind, whereas the executive control network (ECN) regulates the activity of the DN and other networks to produce output that meets task demands. Indeed, not only is the DN–ECN functional connectivity during divergent thinking correlated with individual differences in creative performance, but it can also be used to distinguish more from less creative individuals based on brain activity at rest. Overall, the interplay between these two brain systems in conjunction with our developing understanding of the neural systems that support imagination is beginning to explain the emergence of useful novelty in the mind.

Keywords

Brain · Biology · Creativity · Imagination · Neuroscience

Introduction

Historically, creativity has been associated with flexibility in thinking (Martindale 1995). Indeed, there is substantial empirical evidence in support of this idea. For example, it has been shown that in creative people the orientation of attention is neither focused nor defocused, but varies flexibly between those states in accordance with task demands (Dorfman et al. 2008; Kwiatkowski et al. 1999; Vartanian et al. 2007; Zabelina and Robinson 2010). Early in the phase of problem solving when the problem space is ambiguous and interference is high, attention is defocused, allowing the entry of a large number of potential ideas into consciousness for consideration. In turn, later in the phase of problem solving when the problem

space is relatively less ambiguous and interference is reduced, attention becomes focused to enable further processing of a few promising kernel ideas towards final solution (Vartanian 2009). Inherent in this view is the importance of the *dynamics* of thought processes, rather than the stable dominance of any given thought process.

Interestingly, there is growing evidence from neuroimaging studies to suggest that creativity emerges from the dynamic interaction of large-scale networks in the brain – each of which supports a different mode of thinking (see entry “► [Creativity](#)”). The basic question involves whether particular patterns of brain activation can explain the emergence of thought that is characterized as creative. Before proceeding further, it is helpful to describe what is meant by the term “brain activation.” Most of this research has been conducted using modern neuroimaging technologies, in particular functional magnetic resonance imaging (fMRI). fMRI is a method that enables one to measure brain activation *indirectly*. Specifically, when neurons in a particular region of the brain need to work harder to satisfy task demands, their metabolic demands become greater. In order to satisfy those increased metabolic demands, more blood is supplied to those brain regions to deliver the necessary oxygen for cellular function. In turn, the uptake of oxygen from the blood by the cells causes a change in the proportion of oxygenated versus deoxygenated hemoglobin levels in the blood, and the magnetic signature of that change is detected by the fMRI scanner. In other words, with fMRI we infer brain activation rather than measure it directly. The advantage of this method is that it is noninvasive and offers very high spatial resolution (i.e., information about *where* the activation is occurring).

Early brain-mapping work in this domain demonstrated two overall findings (for meta-analytic reviews see Boccia et al. 2015; Gonen-Yaacovi et al. 2013; Vartanian 2012; Wu et al. 2015): First, there is no single brain region that drives creativity. Rather, the entire brain contributes to creative cognition. Second, the neural correlates of creativity are process- and domain-specific. For example, there are dissociable neural regions that contribute to creativity in the verbal versus

nonverbal (spatial) versus musical domains. Similarly, there are dissociable neural regions that contribute to processes related to creativity such as analogy versus metaphor, as well as creativity tasks that involve generation versus combination of ideas. As is the case with other higher-order constructs such as reasoning (Goel 2007), this early body of work demonstrated that creativity is hierarchical and componential, and that it emerges from the flexible and dynamic reconfiguration of brain regions that contribute to its various types.

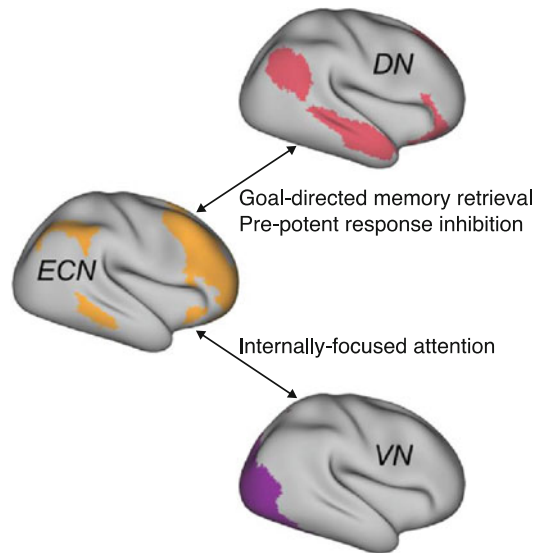
From Brain Mapping to Network Dynamics

More recent work has advanced beyond the search for isolated brain regions to focus on the interaction of large-scale brain networks. These networks were initially discovered using the technique of resting-state connectivity based on which one can identify brain regions that exhibit similar patterns of fMRI activity fluctuations, and can therefore be grouped into large-scale brain systems called “networks” (Zabelina and Andrews-Hanna 2016). Two networks in particular have proven to be central to the emergence of creative thoughts (reviewed in Beaty et al. 2016), although as we shall see later these two networks interact closely with other large-scale networks in accordance with task demands. The first is the default-mode network (DN). Activity in the DN is associated with spontaneous and self-generated thought. Specifically, DN becomes engaged when the individual is not primarily involved in responding to external stimuli, and can engage in activities such as mind wandering (see entry “► [Mind wandering](#)”) and daydreaming (Zabelina and Andrews-Hanna 2016). The second is the executive control network (ECN), which is associated with tasks that necessitate cognitive control. Unlike many other types of cognition in the course of which activations within the DN and ECN are anticorrelated, creativity represents a rare instance in which there is a close coupling (i.e., functional connectivity) between these two systems in the course of cognition (Beaty et al. 2016).

Here the framework by Christoff et al. (2016) regarding the dynamics of thought for

understanding creativity is germane. Within that model spontaneous thought is defined as “a mental state, or a sequence of mental states, that arises relatively freely due to an absence of strong constraints on the contents of each state and on the transitions from one mental state to another” (p. 719). Christoff and colleagues have argued that creativity can be seen as a form of spontaneous thought. However, spontaneous thoughts can nevertheless be constrained by two different types of processes. One type of constraint is deliberate and is implemented through cognitive control. An example of this type of constraint would be when we consciously force ourselves to pay attention to material that we find boring. In contrast, automatic constraints involve mechanisms that operate outside of cognitive control to hold attention on a restricted set of information. An example of automatic constraint would be our inability to shift attention away from a haunting dream. Reinforcing the uniqueness of creativity as a thought process, Christoff and colleagues have argued that creative thinking may be unique among spontaneous thought processes because it likely involves dynamic shifts between deliberate and automatic constraints. Specifically, creativity tends to involve alternation between the generation of new ideas, which is a highly spontaneous activity, and the critical evaluation of these ideas, which is highly deliberate activity (Campbell 1960). From a neuroscientific perspective, the deliberate constraints would be imposed by the ECN, whereas the automatic constraints would arise within the DN as a function of associative processes.

Consistent with this framework, Beaty et al. (2015) used whole-brain functional connectivity analysis to highlight a network of brain regions associated with divergent thinking, which included several regions within DN and ECN (Fig. 1). In addition, their work highlighted the contribution of another large-scale network to the process, namely structures within the *salience network* such as the insula. The salience network has an important role to play in high-level cognitive control and attentional processes because it is involved in the detection and allocation of neural resources to behaviorally relevant stimuli



Possible in Neuroscience, Fig. 1 Cognitive mechanisms of brain network interactions during creative cognition. Notes: *DN* default-mode network, *ECN* executive control network, *VN* visual network. (Adapted with permission from Beaty et al. 2019)

(Bressler and Menon 2010; Menon and Uddin 2010; Uddin 2015). As such, it can trigger the engagement of other networks based on the relevance (i.e., salience) of the task at hand.

Beaty et al.’s (2015) analyses revealed direct functional connections between these three networks in the service of divergent thinking. Specifically, the posterior cingulate cortex (PCC) – a region that lies within the DN – exhibited increased functional coupling with regions of ECN including the dorsolateral prefrontal cortex, as well as regions within the salience network such as the bilateral insula. Using dynamic functional connectivity analysis conducted in the course of engagement in a divergent thinking task (i.e., Alternate Uses Task), Beaty et al. were able to show that the time course of the coupling between PCC and regions within the salience network and ECN varied as a function of the phase of the task. Specifically, PCC showed early coupling with the insula and later coupling with the right dorsolateral prefrontal cortex among other regions. There is evidence to show that one of the roles of the salience network is to facilitate switches between DN and ECN (Cocchi

et al. 2013). As such, its early involvement in the Alternate Uses Task (AUT; Guilford, 1967) could be to facilitate later coupling between DN and ECN. These results highlight the key role that the *dynamics* of network interactions (i.e., transitions) play in the course of creative idea generation.

Data from several fMRI studies including musical improvisation (Pinho et al. 2016) and poetry composition (Liu et al. 2015) have shown that engagement across numerous creativity tasks is associated with dynamic coupling between DN and ECN (see also Ellamil et al. 2012). In this context, DN activity is perceived to reflect the spontaneous generation of ideas or information derived from long-term memory, whereas activity in ECN is understood to reflect evaluative processes that constrain thinking to meet specific task goals. Not only does this dynamic interplay between generative and evaluative processes have a long history in creativity research (Campbell 1960; Martindale 2007; Simonton 2010), but numerous classical models of cognition emphasized the ability of creative people to navigate back and forth between modes of thinking in the service of novel idea generation (Kris 1952). In this sense, the interplay between DN and ECN can be perceived as supporting the interplay between controlled and spontaneous thought processes in the service of novel and useful idea generation.

The case for the importance of DN–ECN functional connectivity in support of creativity is bolstered by two additional bodies of data. First, based on resting-state fMRI data, Beaty et al. (2014) have reported that compared to less creative people, more creative people exhibit greater functional connectivity between DN and regions in the prefrontal cortex that reside within the ECN. This suggests that even when they are not engaged in creative thinking, more and less creative people are nevertheless characterized by different intrinsic patterns of brain function. Second, in a series of studies based on a recently developed method in functional brain imaging analysis – connectome-based predictive modeling – Beaty et al. (2018) were able to identify a pattern of

functional brain connectivity related to high-creative thinking ability consisting of regions within DN, salience network, and ECN. Furthermore, they were able to predict individual creative thinking ability from the same pattern of brain connectivity. These findings suggest that highly creative people are characterized by the ability to simultaneously engage these large-scale brain networks.

Given that DN and ECN are involved in creative cognition, an important question to ask is the specific manner of their interaction. Using dynamic causal modeling (DCM) – an analytic method that makes it possible to test causal hypotheses with fMRI data – Vartanian et al. (2018) probed the specific manner in which ECN controls activation within the DN. They tested two competing hypotheses. According to one hypothesis, ECN might exert unidirectional control over the DN (hypothesis 1). According to that model, DN would generate candidate ideas either through retrieval from episodic and/or semantic memory (or recombination of ideas from memory), which would in turn undergo selection by ECN before a response is outputted. Another possibility might be that ECN and DN might exert bidirectional control over each other as cycles of generation–evaluation are performed before an eventual response is produced (hypothesis 2). This latter possibility is more iterative in nature and acts in the form of successive loops. The analysis of the data, collected using the AUT, strongly supported hypothesis 1. This suggests that ECN exerts unidirectional control over DN in the course of divergent thinking (i.e., ideas are generated by DN and then selected by ECN). It is important to bear in mind that this pattern likely emerged because of the nature of the task used in the study. Specifically, performance on the AUT likely relies on a generation-and-selection sequence that is not iterative, especially given the short time period available for producing responses in the fMRI scanner. Had the task been more elaborate (e.g., story generation), then it is possible that a more iterative and bidirectional effect might have emerged. That possibility needs further examination.

Current Directions: Creativity, Imagination, and the Sensory Cortices

There are a number of contemporary lines of research that are likely to advance our understanding of how the brain generates creative ideas. One line of research involves focus on the psychological and neural bases of *imagination* (see entry “► [Imagination](#)”) – defined as “The power or capacity to form internal images or ideas of objects and situations not actually present to the senses” (Oxford English Dictionary) (see Abraham 2020). It turns out that engagement in imaginative thought might be more prevalent than meets the eye. For example, lab studies have shown that 22% of our thoughts are predominantly task-unrelated and imaginative, meaning that they are not triggered by external sensory events (Stawarczyk et al. 2011). This propensity suggests that imagination – as a potential engine for the generation of novelty – must be taken into account in our efforts to understand the contribution of cognitive processes to creativity (Abraham 2018).

Raffaelli et al. (2020) have recently proposed an integrative framework for the neuroscience of imaginative thought. Within their model, imaginative thoughts can be divided into two broad classes that often interact in everyday experience and in the brain. One class of imaginative thought is rooted in contextually specific and perceptually detailed mental imagery. This class of imaginative content is based on vivid and perceptual mental simulations. Furthermore, the medial temporal lobe (MTL) subsystem within DN is hypothesized to support this specific class of imaginative thought. MTL consists of the hippocampus and parahippocampal cortex and is known to play a critical role not only in episodic and autobiographical episodic memory but also in prospective thinking (e.g., imagining future hypothetical events, formulating autobiographical plans, etc.). According to the *constructive episodic simulation hypothesis*, MTL underlies both past and prospective thinking by retrieving and binding different elements from memory to construct mental scenes (Schacter and Addis 2007). As such, it can be seen why it would play a key role in the construction of

imaginative thought driven by contextually specific and perceptually detailed mental imagery.

The second class of imaginative thought encompasses conceptually-abstract, verbal modes of imagination. Such imaginative thoughts encapsulate internal mental processes construed at a much higher level of abstraction, in verbal or symbolic representational format (e.g., internal monologue). Raffaelli et al. (2020) have argued that this class of imaginative thought is supported by the dorsomedial prefrontal cortex (dMPFC) subsystem of DN – a cluster of neurons that exhibits sensitivity to social processes requiring participants to mentally shift away from the *perceptual* features of the environment to imagine a different cognitive perspective (Lieberman 2007). This framework can explain how one can have both contextually rich as well as conceptually abstract classes of imaginative thought that are supported by the visual and verbal modalities and offers fertile ground for testing hypotheses about the involvement of specific subsystems within DN in support of each class of imaginative thought.

Finally, there is growing appreciation that the networks primarily involved in creative cognition also interact with other large-scale networks in support of this psychological capacity. For example, Beaty et al. (2019) have recently offered an up-to-date account of the network dynamics account of creative cognition in the brain, identifying three classes of cognitive processes that contribute to network interactions during creative performance: (1) goal-directed memory retrieval, (2) prepotent-response inhibition, and (3) internally focused attention, linking each process to the interaction of dissociable networks (Fig. 1). Of particular interest here is a structure within ECN referred to as the anterior inferior parietal lobule (IPL). Not only does IPL support internal attention, but there is also stronger functional coupling between IPL and the visual cortex when attention is internally oriented (Benedek et al. 2016). This suggests that ECN may play a role in the regulation of the focus of attention during divergent thinking by attenuating sensory input (from the visual cortex) and directing

attention to internally generated thought processes. This finding demonstrates that in the context of creative cognition, aside from the DN–ECN coupling, ECN is also interacting with the sensory cortices (e.g., visual cortex) to reduce the impact of external input on internally-generated thought processes.

Summary

Creative cognition is supported by the interaction between large-scale brain networks, in particular DN and ECN. A central idea in this model is the dynamic nature of this interaction in the course of idea generation. The evidence to date suggests that the DN–ECN functional connectivity is related to both variations in performance as well as individual differences in creative ability. Ongoing work on imagination as well as research involving the interactions of these networks with sensory cortices will further our understanding of how the brain supports the emergence of creative thought.

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Possible in Performance and Performing Arts

Tatiana Chemi

Aalborg University, Aalborg, Denmark

Abstract

What is possible in performance and performing arts emerges exclusively through relational, bodily, and performative exchanges. Performative experiences occur in the work of ensembles, be it the preparation and experimentation within the group or the *outer* performance for audiences.

Keywords

Ensemble · Performance · Creativity · Activism · Performativity · Theatre

Definition and History

Ensembles can be defined as “a group of supporting [performers]” “producing a single effect” together (from French *ensemble* = together) (Merriam-Webster, Ensemble. Retrieved 20 Aug 2019. www.merriam-webster.com/dictionary/ensemble#h1, 2019). In this entry, *ensemble* is intended as a group whose participants share interest in and commitment to collaborative art-experiences that are performed, embodied, and transformative (Conquergood, TDR 39(4):137–142, 1995).

Performance is here broadly defined as the act of shaping action by means of repetition and/or negation. Etymologically, performance is the co-presence of repetition and/or destruction (*per*), creation or shaping (*form*), and action or movement (*-ance*, suffix shared in words like *dance*) (Fels, A dead Man’s sweater: performative inquiry embodied and recognized. In Schonmann

S (ed) Key concepts in theatre/drama education. Sense Publishers, Rotterdam, pp 339–343, 2011). Performativity theories (Barad, Meeting the universe halfway: quantum physics and the entanglement of matter and meaning. Duke University Press, Durham/London, 2007; Butler, Bodies that matter: On the discursive limits of sex. Routledge, New York/London, 1993; Haraway, Staying with the trouble: making kin in the Chthulucene. Duke University Press, Durham/London, 2016) draw from performance and performing arts the understanding of reality as per-form-ed. However, too often the practical, embodied, en-fleshed origin of these reflections is forgotten or ignored. Looking at ensembles as working group and as metaphor can contribute to hold on to the tangibility of social performativity (Goffman, The presentation of self in everyday life. Harmondsworth, London, 1978) and of participatory creativity (Clapp, Participatory creativity: introducing access and equity to the creative classroom. Routledge, London/New York, 2016). This perspective can contribute to extend the understanding on what performance and performing arts can make possible in society.

Performance as Activism

Several developments in creativity studies (Adams and Owens 2015; Harris 2014, 2016; jagodzinski 2015) sustain the intersection between creativity and the political: in order to imagine and establish new, appropriate models of democratic responsibility, it is necessary to think critically and act creatively. Creativity becomes a fundamental competence, core to democratic participation that can empower individuals and communities in reclaiming their own agency through collective action, a form of creative ensemble performance. Critiquing discourses of talent, genius and high-achieving individuals is necessary to address ensembles' creativity and its potential for critical pedagogy and democratic change in the world. Here, the body that presents itself as other (Allern 2002) participates in other bodies' presentations of "what is" here and now

(Geertz's "thick descriptions," 1973) or "what might be" in the future (for instance, Dolan's "utopian performative," 2001 or Spry 2016). The performer's creativity is an act of agency and activism, not per definition but per practice. Acting is about making visible actions and reactions in a dramaturgically coherent structure and in entangled relationships with others. Acting is a creative act that can only be performed *together* with others: with, around, against colleagues in the ensemble but also for, with, to, in spite of spectators. According Barad (2007), "knowing is a material practice of engagement" (p. 89) and knowing in ensembles cannot but be collaborative and participatory. This is not to say that performative interventions do necessarily achieve positive aims (Barnes and Coetzee 2014), especially when explicitly framed as activist societal change.

With its origin from the ancient Greek verb *theaomai*, to look (Etymonline 2019), theatre indicates the act of looking at repeatedly or of pondering. This action is a multiple negotiation of visible and invisible practices that occur in tangible and culturally codified spaces (Barba and Savarese 2019): onstage activities reified in frontal or closeup expression (visibility, stage) and offstage hidden actions (back, scene). When Goffman (1978) explained the dynamics of social roles, he turned to these performance-proper shifts between front and backstage and also to the audience's ability of shaping actions that are intelligent, sustainable and appropriate, and *ergo* creative and potentially educative. Theatre and performance give access to living third spaces (Bhabha 1994) for its participants (the makers and the spectators). According to Bhabha (1994), third spaces are "hybrid sites of cultural negotiation" (p. 178), and performance is nothing but a third dimension for encounters (Barba 1995). The performing space is potentially activist and empowering, because it enables opposites to coexist (destruction/making, construction/deconstruction, repetition/originality), just like theatre performs in spite of and against the background of oppositions (front/back, visible/invisible, expressed/hidden).

Creativity in Groups and Teams

Obstacles to the understanding of performance as the *locus* of creative possibilities can be the residual tendencies toward individual discourses that feed into instrumental uses of creativity, expected to boost economic growth, techno-industrial development, and critical thinking (World Economic Forum 2018). With origins in romantic and industrialist mind-sets, the idea that creativity is the achievement of individual talent and genius has been influencing centuries of studies (Kaufman and Sternberg 2010). In several reviews (Shaheen 2010; Stein 1974, 1975; Ryhammar and Brolin 1999) that include group level, pressure, and role play, group creativity still relies strongly on the individual as emanating center of creativity. Csikszentmihalyi (1996), Gardner (1993), and Amabile (1983, 1998) investigate environments in organizations and systems but focus on the individual, whose actions are seen as core to any creative initiative.

Alternative perspectives are offered in Harris' creative ecologies (de Bruin and Harris 2017; Harris 2016), where educational environments are interpreted as fundamentally creative within ecological models that include groups of people and partnerships. A paradigm shift is in John-Steiner's (2000) Vygotski-inspired studies on creative collaborations, where creativity is reframed as interdependent creation in distributed exchanges. Her look on small and medium-size teams of collaborators shows that creative ideas travel among individuals and milieus through distributed trajectories. Regardless of the context and the type of collaboration, partnerships of creative individuals are built on the shared engagement in active conversations among their members who are close in time and space (collaborators) but also with individuals who are distant in space and in time (role models, inspirators, teachers).

Similarly, Chadwick and de Courtivron (1993) look at the constructivist concept of *significant others* in intimate relationships drawing from creative collaborations between romantically engaged artists, and Melnick and Nevis (2003) apply Gestalt hermeneutics to the investigation

of long-term intimate relationships between artists. They emphasize the role that *form* is given in the artists' creative processes, as a sort of third dialogic partner. John-Steiner's (2000) investigation is the most complete study on artistic partnerships that contributes to a new understanding of creativity as the *interdependence* of individuals who collaborate in *distributed* creative exchanges. Sawyer (2007) coins the definition "group genius": collaborative networks of influences that need time to emerge and are based on the group's members commitment to building on each other's ideas and capacity for deep listening, suspension of judgment, and self-organizing processes. This idea is later developed in Miettinen (2006) and in Sawyer and DeZutter (2009), for whom distributed creativity emerges in "situations where collaborating groups of individuals collectively generate a shared creative product" (p. 82). This is consistent to this entry's definition of ensemble: distributed creativity can be said to be proper to ensembles, as Sawyer (2007) sustains with his concept of "group genius." Glăveanu (2014) and Clapp (2016), though, argue that group genius risks merely replacing individual genius, so they reconceptualize distributed creativity as creative interactions stretching beyond limitations of time and space. Moving from this collective, distributed, participatory creativity, it can be possible to look beyond psychological and individual-centered accounts and to engage in ethnographic and new materialistic perspectives on performance and performativity.

Creative Performance in Ensemble

Creativity is here understood as socially and culturally situated as the "interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is both novel and useful as defined within a *social context*" (Plucker et al. 2004, p. 90). However, the situatedness of creativity is here strictly entangled (Barad 2007; Haraway 2016) with the materiality of the actor's body and its "coperformativity" (Spry 2016). Different

performativity theories recognize performance “as a generative vocabulary for understanding human behavior” (Pelias 2008, p. 185) and as autonomous ways of knowing. In Pelias (2008), this has its roots in Goffman’s presentation of self (1978), Turner’s ritual (1982), and Butler’s performativity (1993). Differently from other teams, performing ensembles offer examples of creative collaborations in groups that share a bodily affective language and that work with poetic processes. This makes them a crossroad linking artistic expression, pedagogical experimentation, and activist engagement (Chemi 2018).

Individuals in teams of performers necessarily learn together: they have to tune their instruments to each other, be it the body, movement, or sound. They challenge each other to find solutions, questions, and perspectives, in order to constantly renew the repetitive element that is implicit in performance (training, rehearsal, prolonged showcasing periods). They enact social change not only by direct action on society (activism) but also by their example: by keeping the third space open as pulsating room for concrete practice. Sawyer (2007), focusing on jazz musicians and improv theatre, and Jones (2015), looking at jazz, had already touched on the ways ensembles can potentially offer knowledge on collaborative creativity. However, improvisation – in jazz or theatre ensembles – is nothing but one performative expression among a plurality of dramaturgical approaches. Burgoyne (2018) addresses this multiplicity and the explicit connection between ensemble’s processes/practices and creativity. Looking at historically defined performative practices, it is possible to single out how ensembles can establish creative environments for artists and citizens in socially sensitive areas or themes.

Theatre as community intervention (Kershaw 1992) is a frequent practice in popular theatre, political theatre, and agitprop (Barnes and Coetzee 2014), conceptually sustained by critical pedagogy (Boal 2000; Freire 1996). However, the link between creativity, performance, and activism requires more study. This is because the idea of creativity as the achievement of individual talent and genius has been influencing studies for

centuries (Kaufman and Sternberg 2010). Understanding creativity as relational and collective has been a relatively recent conquest (Craft 2001, 2005; Harris 2014). Creativity is now seen as a collective-relational phenomenon (Glăveanu 2014; Sawyer 2007; Sawyer and DeZutter 2009; Wyatt 2018), yet studies that explore the relationships between education and creativity mostly ignore the ensemble as subject of investigation and as a concept.

Applying performance and performing arts to social problems is based on the assumption that acts of *mimesis* (reproduction), *poiesis* (making), and *kinesis* (change) (Conquergood 1995) in everyday and artistic performativity can be transformative not only for the single individual but especially for individuals in co-creative relationships, for communities. The challenge, though, is methodological and ethical: how is it possible to design interventions and research methods that are postcolonial (Bhabha 1994) and that look beyond the Western claim of one-sided truths (Smith 1999)? The risk is continuing to buy into colonial discourses where public or research institutions appropriate the definition of *what is possible*, without giving local communities authority to *perform* their own identity (Smith 1999). This is telling of a more general societal tendency toward marginalization and inequality in participation in democratic structures, with the insurgence of potentially dangerous conflicts and polarizations. In other words, performance might help communities to co-create as/in ensembles and to reclaim their own future (what is possible in the future through what has been in the past).

Cultivating Ensemble Creativity

Starting from the hypothesis that the conditions for democratic principles to flourish in society are largely determined by the extent to which creative practices are established in education (paraphrasing Adams and Owens 2015), it is possible to look at performance as a tool for societal change. According to performance theorists as Schechner (2002), creative processes are fundamentally pedagogical. Schechner (2002), “defines performance

as the activity that individuals engage in when they participate in given events that are to influence other participants” (Chemi and Pompa 2017, p. 110). He is clearly inspired by Goffman’s work on the presentation of self in everyday life (1978), but extends Goffman’s interest to the pedagogical elements of creation.

In Schechner (2002), the multiple elements of performance imply learning processes: change and transformation, enquiry and research, and playfulness or play. This unfolds on several levels: the active, technical, or activist (“doing”), the poetic or expressive (“showing doing”), and the hermeneutical (“explaining showing doing”) (Schechner 2002, p. 22). In this sense, ensembles of performers offer knowledge on not only what is possible *within* creative teams but also what these groups can *make possible* outside and beyond the limits of ensembles. Neelands claims (2009) that ensembles can provide participants “with a model of democratic living” (p. 173) and that “theatre has a role to play in giving a voice to the excluded; in giving a voice to the minority; in demanding the right to speak publicly; in criticising without fear; and in questioning the borders of freedom” (Neelands 2009, p.180).

These perspectives call for a research that is performative and performance that is research: what is needed is the invention and application of (artistic and research) methodologies that privilege socially engaging, embodied, participatory, co-creative experiences. In order to design such imaginative interventions, scholars have developed hybrid forms such as performative inquiry (Pelias 2008), critical plays (Harris and Sinclair 2014), performed ethnography (Madison 2018), and performance ethnography (Denzin 2003). To address socially relevant themes, research methods must give voice to the necessity of producing analytically and critically qualitative data, reporting on human beings without reducing them to stereotypes, and generating discussions (Donmoyer and Donmoyer 2008). Original and respectful analyses are aware of the multiple presentations of selves (Goffman 1978) that are *entangled* (Barad 2007) and *diffracted* (Barad 2007; Haraway 2016), because they demand the existence of pluralities in co-creative and poetic activities. What performance and

performing arts can make possible is to shape time and space for individuals to co-create in ensembles or *as if* they were an ensemble. In these *loci*, reciprocal pedagogy (Chemi 2018) and everyday activism are the shared activities by means of which imagining alternative future is possible. Encounters become a platform to address and act on negative narratives; ensembles become laboratories for collaborative creativity.

However, performing ensembles can only contribute to the imagination of futures if affective aspects are addressed in practices and knowledge. This can be done by looking at how group flow (Sawyer 2007) and team flow (Van Hout et al. 2016) can be readdressed as co-creation (Chemi and Pompa 2017), relational creativity (Wyatt 2018), and radical generosity (Turner and Campbell 2018). In other words, a radical *affective turn* in creativity studies is needed, of the kind Turner and Campbell (2018) address by investigating the creative processes occurring within theatre ensembles, theatre laboratory, and networked theatre groups, looking at how these communities engage in radical “generosity” (p. 58).

These hybrid spaces for artistic practice and enquiry demand specific ethical considerations and guarantee the respectful inclusion of all participants. The necessary ethical measures for humanistic research and social interventions acquire an additional dimension when performance is involved: they draw from literature, where ethical and aesthetic qualities are described as indivisible, where “priority is the achievement of cathartic impact on audiences/readers as well as on actors/participants” (Chemi and Harris 2019). Resonance (Harris and Sinclair 2014), the researcher’s active role (Scott 2018) and risk of colonizing gazes (Smith 1999) are given special methodological attention and space. In this way, utopian futures acquire the tangibility of the flesh and are performed by means of material bodies in open chaotic relationship to each other.

Cross-References

- “As If” Thinking
- Creativity

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Possible in Philosophy

Antoine Taillard

Institute of Philosophy, University of Neuchâtel,
Neuchâtel, Switzerland

Abstract

Within philosophy, the word “possible” is generally used to speak about either of the following. (1) *Possibility*: the notion that is expressed by sentences such as “It is possible that there are green cats,” “She may become the best surgeon in the city,” and “Our team can win the race.” Among the features of possibility, three are of particular interest to philosophers: it is closely related with necessity, contingency, and actuality; it is not unified, but comes in multiple varieties; it is intuitively linked to conceivability. (2) *The possible*: the target of sentences expressing a possibility, i.e., whatever is possible. Philosophical inquiry is notably interested in the existence and the nature of possible things. For those who think possible things exist, the challenge is to say how and where. For those who think possible things do not exist, the challenge is to say how sentences stating a possibility can be true.

Keywords

Possibility · Possibility-statements · Possible objects · Conceivability · Modality · Philosophy · Metaphysics

When speaking of possible in philosophy, one must be careful to distinguish between three closely related notions: possibility, possibility-statements, and the possible. Consider the following sentences: “It is possible that there are green cats,” “Space elevators are possible,” “She may become the best surgeon in the city,” “Our team can win the race.” Lexically and grammatically, it is clear that these sentences differ from each other. However, these superficial differences cannot hide a deeper unity. There is a single notion behind each of these sentences, namely *possibility*. Thus, while these sentences vary greatly in their grammatical form, they all have the following logical form:

It is possible that p

(Here and in what follows, “p” stands for some affirmative sentence; “it is possible that” is an operator ranging over this sentence.) Let us call a sentence of this form a *possibility-statement*. With possibility and possibility-statements introduced, a third notion emerges naturally: *the possible* is the target of possibility-statements, it is what sentences expressing a possibility are about; in short, it is whatever is possible.

While this entry discusses questions that occupy philosophers working on the subject of possibility, it is not written as an introduction to the philosophy of modality. Rather, the goal is to familiarize the reader with the notion of possibility as it is used within philosophy *in general*. Philosophy of modality itself is quite limited in scope. But many areas of philosophy use modal notions. Talks of possibility and necessity are extremely frequent in metaphysics. For example, these notions are central in the debate about essences, the structure of reality, the laws of nature, causality, etc. (Historically, the importance of modality for metaphysics was greater still: in the second half of the twentieth century, metaphysical debates tended to be laid in terms of possibility – with David Lewis (1973, 1986) being the most famous and enthusiastic supporter of this method. However, the turn of the millennia has seen a rise of defiance in this approach (see e.g., Fine 1994)). Outside metaphysics, possibility is an important notion too. It is sometimes used

in philosophy of action to define abilities (Brown 1988). The inquiry about permissibility in deontic logic and metaethics has been crucially influenced by the study of possibility (the classical paper here is von Wright 1951). Moreover, possibility is at the center of at least two conceptual tools that are used throughout philosophy: supervenience and arguments from possibility/conceivability.

The first section of this entry places possibility on the “map of modality,” among impossibility, necessity, contingency, and actuality. The second section highlights the important fact that there are multiple kinds of possibility. The third section asks, “what exactly is the possible?” and presents the major metaphysical debate that stems from this question. The fourth and final section discusses the relation between the possible and the conceivable.

Possibility and Other Modal Notions

What other modal notions are related to possibility? And *how* exactly are they related to possibility?

First, and most importantly, possibility is related to necessity. One can express that something is not possible by pointing to the necessity of its negation: “it is necessary that bachelors are unmarried” is logically equivalent to “it is not possible that bachelors are married.” And “it is not necessary that green cats do not exist” means that green cats are possible. More formally, necessity and possibility are interdefined in the following way (here and in what follows, “iff” abbreviates “if and only if”):

It is necessary that p iff it is not possible that non-p
It is possible that p iff it is not necessary that non-p

Since possibility and necessity are thus interdefinable, many philosophical discussions that appear to be solely about necessity are in fact relevant to the study of possibility and the possible. Philosophical investigations of possibility are more often than not studies of modality in general.

Second, possibility is related to contingency. In English, “possible” is somewhat ambiguous.

Taken in a broad sense, it is simply the opposite of impossible. In that sense, it is used merely to say something can be the case, without indicating in any way whether this thing is necessary or not. Thus, it is not only possible that all bachelors are named Sam, it is also possible (as well as necessary) that all bachelors are unmarried. But “possible” has a more restricted meaning which excludes not only impossibility, but necessity too. This is the sense at play in sentences such as “You can watch the TV if you want” or “It is possible that the valley will be flooded.”

Within philosophy, “possible” is generally used in the broader sense. Still, there is a philosophical notion that accounts for the restricted sense: contingency. It is defined from possibility in the following way:

It is contingent that p iff it is possible that p and it is possible that non-p

In other words: contingency is possibility without necessity. As is the case with the two meanings of “possible” in English, there is an asymmetry between possibility and contingency: all contingent truths are possible, but not all possible truths are contingent (since some possible truths are also necessary). This link between possibility, necessity, and contingency is summarized in Fig. 1.

Actuality is another notion found alongside possibility. In that context, to be actual is to be the case, to exist “in our world.” Thus, Barack Obama, grey cats, and the property of being red are actual. On the contrary, Sherlock Holmes, green cats, and the property of being a square circle are not. (Of course, since actuality is existence in our world, what exactly one takes to be actual depends on what one takes to exist in the first place.)

The philosophical notion of possibility is neutral about actuality. Thus, “it is possible that there

are grey cats” is a true possibility-statement and is no more problematic than “it is possible that there are green cats.” However, in English, “possible” is sometimes used to say that something can be the case *and that it is not, in fact, the case*. For example, consider “It is possible that she becomes the best surgeon” and “We could be at home right now.” What is expressed by those sentences is a *mere possibility*, defined as a non-actual possibility:

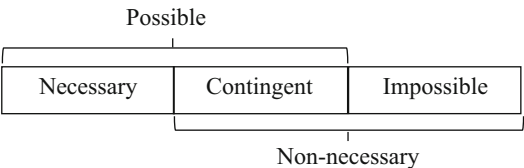
It is merely possible that p iff (i) p is possible and (ii) p is not actual

The link between actuality, possibility, and mere possibility is summarized in Fig. 2.

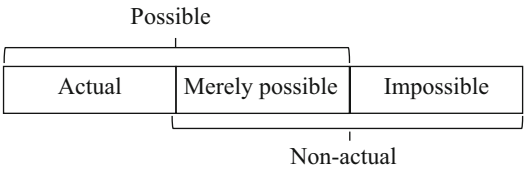
Varieties of Possibilities

Consider the following possibility-statement: “it is possible to fly from Earth to Mars in one month.” Is it true? No: there is not a single ship that will allow you to do that. Yes: it is fully compatible with the laws of nature governing space travel. Or consider: “you may eat with your hands.” Is it true? Yes, if the statement is to be interpreted as saying something about our anatomy; no (let’s assume) if it is taken to inform us about cultural permissibility.

Examples of possibility-statements that seem both true and false are easy to come by. Should we then abandon all talks of possibility as hopelessly confused or obscure? Of course not. Rather, such examples show that a single possibility-statement can be interpreted in a multitude of ways. And these various readings suggest there are various kinds of possibility. Figure 3 presents some of those kinds that are of particular philosophical interest. (This is not by any means an exhaustive list; there are many other kinds of possibility:



Possible in Philosophy, Fig. 1 Possibility, necessity, and contingency



Possible in Philosophy, Fig. 2 Possibility and actuality

Kind of possibility	It is possible...	Given...
Conceptual	that George Sand is not Amantine Dupin	<i>the concepts</i> of George Sand and Amantine Dupin
Metaphysical	that Venus is the planet closest to the Sun	<i>the nature</i> of Venus
Nomological	for a ship to reach Alpha Centauri in less than five years	<i>the laws</i> of the universe
Normative	for you to walk on the lawn	<i>the norms</i>
Epistemic	that Sam is the murderer	<i>the evidences</i> available to the agent

Possible in Philosophy, Fig. 3 The third column indicates the type of truths relevant to determine the kind of possibility

mathematical, biological, technological, sociological, historical, etc.)

The kind of possibility expressed by a possibility-statement is determined by the set of truths compatible with this statement. For example, while the set of truths about the nature of Venus plausibly contains “Venus is a celestial body,” “Venus is a terrestrial planet,” and many others, it does *not* contain “Venus is the second planet closest to the Sun.” (The nature of Venus would not change should Mercury disappear.) Thus, “it is possible that Venus is the planet closest to the Sun” is compatible with truths about the nature of Venus and expresses a metaphysical possibility.

How are the various kinds of possibility related to each other? To answer, notice first that at least some possibility-statements express more than one kind of possibility. In other words, some possibilities belong to more than one kind. For example, not only is it a metaphysical possibility that Venus is the planet closest to the Sun, it is also a conceptual one: the concept of Venus does contain the concept of the second planet closest to the Sun. (By contrast, notice how the concept of bachelor seems to contain the concept of unmarried.)

From this observation, one is naturally led to wonder about the *hierarchical structure* of these kinds. Are some kinds of possibility merely species of other kinds, in the sense that any statement expressing a possibility of the first kind also

expresses a possibility of the second kind (but not vice versa)? For example, are all nomological possibilities also metaphysical possibilities? And further: is there a fundamental kind of possibility? Is there a single (philosophically interesting) kind of possibility, in terms of which all the others can be defined?

In many instances, the reduction of one kind of possibility to another is problematic. Take, for example, the metaphysical/conceptual case. As Kripke (1980) famously argued, some conceptual possibilities are not metaphysical. While “George Sand is not Amantine Dupin” is a conceptual possibility, it is not a metaphysical one: indeed, the names “George Sand” and “Amantine Dupin” denote one and the same thing and it is metaphysically impossible that something is different from itself. And there are also metaphysical possibilities that are not conceptual ones. Let “HiTo” be the name of the highest tower on Earth. This stipulation makes it such that the concept of HiTo contains the concept of the highest tower on Earth. So, it is conceptually impossible that HiTo is not the highest tower on Earth. However, it seems to be a metaphysical possibility: it is not in the nature of the object currently denoted by “HiTo” (the Burj Khalifa in Dubai) to be the highest tower on Earth. Thus, while the set of conceptual possibilities and the set of metaphysical possibilities overlap, neither is a subset of the other.

To say that reduction of one kind of possibility to another is problematic is not to say that it cannot be achieved. For example, there are no major difficulties in reducing nomological possibilities to metaphysical possibilities. (Interestingly, the reduction of nomological *necessities* – laws of nature – to metaphysical necessities is much more controversial. See e.g., Ellis 1999; Shoemaker 1998) But the general reduction of all varieties of possibility to a single fundamental kind seems seriously compromised.

Target of Possibility: Truths and Objects

The possible is the target of possibility-statements; it is the thing such a statement is about, the thing it ascribes possibility to. What is this thing, then?

A first suggestion: possible things are affirmative sentences. Thus, “it is possible that there are green cats” says the sentence “there are green cats” is possible. This suggestion has the advantage to strictly follow the logical form of possibility-statements. As we saw, the operator “it is possible that” ranges over *p*, an affirmative sentence. However, it is not very clear what it means for an affirmative sentence to be possible. Clearly, it does not mean it is possible the sentence *exists*. The sentence “There are married bachelors” exists, but it is obviously impossible that there are married bachelors.

A better suggestion: a possibility-statement “it is possible that *p*” is not concerned about whether *p* exists, but about whether *p* is true. Thus, “Possibly, there are green cats” does not mean it is possible that the sentence “there are green cats” exists. Rather, it means the sentence is possibly true. According to this view, the target of a possibility-statement “it is possible that *p*” is *the truth value* of *p*. If it is possible that *p* is true, then the possibility-statement itself is true. If it is not possible that *p* is true (e.g., if *p* is self-contradictory, such as “there are married bachelors”), then the possibility-statement itself is false.

However, this answer raises two worries. First, one can legitimately wonder what it is exactly for a sentence to be possibly true. “Some bachelors

live on Mars” is false. So is “some bachelors are married.” But the former is (metaphysically) possibly true, while the latter is not. How come? What is the criterion for deciding whether it is possible that *p* is true? Second, possibility-statements are not merely about the possible truth value of sentences. Intuitively, “it is possible to reach Mars in one year” says something about how the world is, about the current technology or the laws of nature. Thus, possibility-statements are not (solely) about possible truths, but about possible things in the world, about possible *objects*.

This last point leads to a third suggestion: the target of a possibility-statement “it is possible that *p*” is not (merely) the truth value of *p*, but whatever object is picked out by *p*. “Possibly there are green cats” does not merely say that “there are green cats” is a possible truth. It says that green cats are possible objects. This suggestion also helps with the other problem raised by the previous account. Indeed, we now have a simple criterion for determining whether an affirmative sentence is possibly true: *p* is possibly true iff there is a possible object corresponding to *p*. “There are green cats” is possibly true iff green cats are *possible objects*. “Venus is the planet closest to the Sun” is possibly true iff it is a *possible fact* that Venus is the planet closest to the Sun. This has the advantage to mirror the standard criterion for truth in general: *p* is true iff there is an object corresponding to *p*. “There are grey cats” is true iff there are grey cats. “Mercury is the planet closest to the Sun” is true iff it is a fact that Mercury is closest to the Sun. Thus, possible truths are only a species of truths in general and require no special treatment.

Since possibility is neutral about actuality (see section “[Possibility and Other Modal Notions](#)”), at least some possibly true sentences are also actually true. For those, there are no particular problems with the criterion just suggested. “There are grey cats” is possibly true, iff there are possible objects that are grey cats. And sure enough, there *are* such possible objects: the *actual* grey cats.

But what about *mere* possibilities, possible truths that are not actual truths? Given the above criterion, since “there are green cats” is possibly

true, there are (possible) green cats. But obviously, no actual object is a green cat. Where do we go from there, then? How to save the suggested criterion for determining which sentences are possibly true? This is one of the main questions in the philosophy of modality.

In contemporary literature, there are two main views about merely possible objects. On one side, we have possibilism, the thesis that merely possible objects are real, in exactly the same way that actual objects are. According to this view, there *are* green cats as well as grey ones. Only, the formers do not exist in the same “modal space” as the latters: they do not exist in our world, but in another possible world.

The most famous version of possibilism is Lewis’ modal realism (1986). Lewis thinks of possible worlds as maximally inclusive regions of space-time, that is, spatiotemporal wholes. In his view (1970), “actual” is nothing more than an indexical term useful to speak of our possible world, as “here” is useful to speak of the location we are at. And as there is nothing special about the location denoted by “here,” there is nothing special about the actual world.

For general sentences such as “there are green cats,” modal realism allows to keep the criterion suggested above untouched. The sentence is possibly true, iff some possible worlds include green cats. (And the sentence is *actually* true iff one of these worlds is the actual one.)

However, for singular sentences – that is, sentences about a specific individual, such as “Venus is the planet closest to its star” – more needs to be said. Indeed, “Venus” denotes an object in *our* world, not an object in another possible world. Thus, there is no world where it is a fact that Venus is the planet closest to its star. And so, modal realism cannot account for the sentence being possibly true. To answer this problem, Lewis developed a counterpart theory (1968). While only the actual world includes Venus, some other possible worlds include *counterparts* of Venus, that is, objects qualitatively similar to Venus, objects sharing some properties with Venus (e.g., the property of *being a terrestrial planet*, of *having a periaapsis of 0.7 AU*, etc.).

The possibility-statement “Possibly, Venus is the planet closest to its star” is then analyzed as “there is some *counterpart* of Venus such that this counterpart is the planet closest to its star.”

Another version of possibilism is modal dimensionalism (Yagisawa 2010; see also Graham 2015). Rather than accepting multiple spatiotemporally extended worlds, modal dimensionalism accepts only one world that is both spatiotemporally and modally extended. My cat is playing in some place (i.e., at some spatial index) and eating at another. My cat is asleep at some instant (i.e., at some temporal index) and awake at another. Similarly, my cat is grey at some modal index and green at another. Contrary to Lewisian realism, modal dimensionalism does not require a counterpart theory. “It is possible that my cat is green” is not made true by some green *counterpart* of my cat living in a different possible world; rather, it is made true by the existence of *my* cat at the modal indices where it is green.

The other (and much more popular) view about merely possible objects is actualism, the thesis that everything – in particular every possible object – is actual. According to actualism, then, merely possible objects such as green cats do not exist. While actualism does not come with the heavy ontological cost of possibilism, it must face the problem of providing a criterion for merely possible truths such as “there are green cats.”

One answer to this problem is given by ersatzism. In lieu of merely possible objects, ersatzists admit only actual representations of such objects. Green cats do not exist, but some actual representations of green cats do. The various ersatzists’ views differ on what exactly these representations are taken to be. Notable suggestions include sentences (Carnap 1947, esp. sec. 2) and meanings of sentences, that is, propositions (Adams 1974). A possible world can then be defined as a maximally consistent set of representations: a set of representations whose members would all be correct were the represented objects to exist, and to which no member can be added without creating a pair of contradictory

representations. From there, the following account of possible truths is given: “there are green cats” is possibly true iff there is a possible world that contains a representation of green cats. Two points are worth mentioning here. First, ersatzism is not a reductive theory of possibility. Indeed, as introduced here, consistency is a modal notion. Second, according to ersatzism, the criterion for merely possible truths do not mirror the standard criterion for truths in general.

Besides ersatzism, there are other ways one can provide a criterion for merely possible truths without committing themselves to the existence of non-actual objects. One can argue green cats and the fact that Venus is the planet closest to the Sun *are* actual objects, although not concrete ones. This view is known as new actualism (Linsky and Zalta 1994; Williamson 1998). As for possibilism, it has the advantage to straightforwardly preserve the criterion for possible truth. It must, however, face the suspicion that the difference between actual non-concrete objects and merely possible objects is a difference in name only.

An actualist may also go with necessitism, the thesis that necessarily, all truths are necessary, that is, necessarily, there are no mere possible truths. In this form, the view has no contemporary supporters (but see Williamson 2013 for a discussion). While it avoids postulating possible or mysterious non-concrete objects, it has at least two major issues: first, it is very implausible that *all* possibility-statements are false; second, it is unable to account for the intuitive distinction in truth value between sentences that are possibly true and sentences that are not possibly true (e.g., “there are some married bachelors”). Still, necessitism is a real alternative to the actualist and maybe a working theory can be extracted from it.

Possibility and Conceivability

Intuitively, possibility and possible objects are related to fictions, make-believe, imagination, and the like. In philosophy, this intuition is most

often laid in terms of the link between possibility and *conceivability*.

Defining conceivability is obviously the major issue in this debate. Here, the following characterization of what it is for something to be conceivable will suffice. A concept is broadly understood as a mental representation: my concept of Mars represents Mars in the same way as the word “Mars” and a picture of Mars do. To conceive something is to have (or to form) the concept of this thing. “To conceive” is thus a generic term denoting a variety of activities, such as to entertain the thought of, to imagine, to hypothesize, etc. (Gendler and Hawthorne 2002, p. 7 discuss other examples.) Something is then said to be conceivable iff it can be conceived, iff it is possible to have a concept of it.

When investigating the link between conceivability and possibility, it is important to specify which *kind* of possibility is at play (section “[Varieties of Possibilities](#)”). For example, it is obvious that nomological or normative possibilities are neither identical to nor entailed by conceivability. On the contrary, it seems to follow from the definition of being conceivable that it is identical to being conceptually possible. Arguably, “it is possible to have the concept of Venus as the planet closest to the Sun” is synonymous with “it is possible that Venus is the planet closest to the Sun *given the concept of Venus*.” Here, the discussion will focus on *metaphysical* possibility. Indeed, the link between conceivability and metaphysical possibility is generally the one that attracts the most interest from philosophers. A reason for that is that one would like to use so-called arguments of conceivability: to support claims about the nature of things from claims about what things are conceivable (see e.g., Chalmers 2003, p. 106). Such arguments require the relation between conceivability and metaphysical possibility to be one of two kinds: identity or entailment.

Is conceivability *identical to* metaphysical possibility? Is being conceivable the same as being metaphysically possible? No. To see why, note first that conceivability is a modal notion: being possible figures in the definition of being conceivable. Conceivability-statements can thus

be transformed into possibility-statements. “It is conceivable that Venus is the planet closest to the Sun” is equivalent to “it is possible to have the concept of Venus as the planet closest to the Sun.” But the possibility behind that last statement is clearly not the same as the possibility behind “It is possible that Venus is the planet closest to the Sun given the nature of Venus.” The latter statement is about the nature of Venus while the former is about the nature of the *concept* of Venus (and maybe the nature of the entity having the concept). Also, while the second statement expresses a mere possibility, the possibility expressed by the first statement is actual.

Does conceivability *entail* metaphysical possibility? Are all conceivable things metaphysically possible? Here too, the answer seems to be negative. In section “[Varieties of Possibilities](#)”, we saw that at least some conceptual possibilities (“Amantine Dupin is not George Sand”) were metaphysical impossibilities. If we add the plausible assumption that conceivability just is conceptual possibility, we get the consequence that some conceivable things (the state of affairs *Amantine Dupin being different from George Sand*) are not metaphysically possible.

Another often-cited counter example to the thesis that conceivability entails metaphysical possibility builds on the unproven mathematical affirmation known as the Goldbach conjecture: “every even integer greater than 2 can be expressed as the sum of two primes.” It is conceivable the conjecture is false and it is conceivable the negation of the conjecture is false. But mathematical affirmations such as the conjecture and its negation are widely taken to be necessarily true, if true at all. Thus, whether the conjecture is true or its negation is true, we have conceivability without possibility.

There are, however, various proposals in order to avoid these counterexamples. The main strategy consists of showing there is a better definition of conceivability, one under which the counterexamples are not in fact cases of conceivability. Building on Descartes’ argument for dualism, Van Cleve (1983, p. 37) defines what he calls *strong conceivability*: something is conceivable for a subject iff that subject sees (perceives clearly

and distinctly in his mind) that *p* is possible. This definition avoids the counterexample just mentioned, since there is no such clear and distinct perception in those cases. Yablo (1993, sec. X) makes a similar suggestion: it is conceivable that *p* if I can imagine a world (or situation) in which *p* is true. Thus, it is not the case that “Amantine Dupin is not George Sand” is conceivable, since the names “Amantine Dupin” and “George Sand” denote one and the same person. (A similar proposal is made by Chalmers 2002) Whether these solutions really succeed in establishing the entailment from conceivability to metaphysical possibility is yet to be determined.

Conclusion

While possibility and possible objects have been thoroughly explored by philosophers, these notions are still the target of philosophical inquiry. This is not to say that there are no consensual views about them. In particular, the link between possibility and the other modal notions of necessity, contingency, and actuality is largely admitted in the philosophical literature. But important points for the philosophy of modality are still debated, notably the nature of possible objects and the link between the varieties of possibility. These being distinctly philosophical questions, it is not clear if and how the special sciences can help here. Whatever is the case, it is worth keeping these problems in mind. Indeed, modal notions are so fundamental and so common that one will undoubtedly meet and use them – especially if one is interested in counterfactual beliefs, imagination, pretense, and the like.

Cross-References

► [American Pragmatism](#)

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Possible in Photography

Francesco Arese Visconti

Webster University Geneva, Geneva, Switzerland

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Photography · Visual semiotics · Portrait photography · Possible · Selfies · Web-sharing

Definition

Photography is a form of expression. It uses images to communicate. Previously called *heliography*, *daguerreotype*, or *calotype*, the process of capturing images in a permanent way was assigned the term *photography* by Sir John F. W. Herschel in 1839 (Newhall 2009, p. 21). The etymology of *photography* comes from the ancient Greek and it is composed by two words: *photos* and *graphein*. *Photos* literally means “of the light.” *Graphein* means writing. Photography is the writing of the light. Every time we take a photograph, we are “writing” a message and it is important that we know how to ‘write’ this message to properly communicate. Photography uses a complex system of signs in the same way as written language does. The complexity of this system of communication arises from the way that the used signs can be misinterpreted and create different associations for each viewer/reader. This is one of the reasons why photography as a visual language has been studied by semiologists (Barthes 1977; Berger 2014; Joly 2015; Lester 2014; Rose 2001).

In this sense, as a communication system, photography makes communication possible between human beings. It makes this communication possible across spatial and temporal distance.

Introduction

A black wooden case (7 × 5.5 cm) covered by decorated leather (Fig. 1): this is a daguerreotype from the middle years of the nineteenth century.



Possible in Photography, Fig. 1 Unknown. *Portrait of an unknown young man*. 1850 c. Daguerreotype. (Source: Arese Visconti private collection)

Once opened, protected by felt and behind a glass, we discover a shiny, reflective portrait of a man mounted in a golden frame. This portrait was taken on a silver plate. A man in his thirties stares at us. He wears a white shirt with a bow tie, a waistcoat, and a jacket. With a long goatee beard and hair which covers his ears, he looks straight into the camera. The lack of expression enhances what Walter Benjamin (1935) called the aura, the unique phenomenon of the distance. It is a temporal distance. Staring at us with this neutral expression from another century, this man establishes a dialogue with us. Who is he? What was his job? Which were his fears, his goals, his achievements in life? What did he do right after this photographic session? Did he go back home? Did he have an appointment? A photographic portrait of an ordinary man makes possible an improbable, but intense, dialogue through centuries. Can portrait photography produce some sort of immortality for humans?

Photographic portraiture became a mass phenomenon with the official presentation of the daguerreotype at the Académie de France in

1839, (Sorlin 2001, p. 21). Until the middle years of the nineteenth century, only kings and aristocrats could afford to have a portrait painted and even in that case it was an idealized representation of reality (Burke 2001, p. 22). Photography made the representation of the self-accessible to a large number of people. If by the democratization of photographic portraiture, we mean the financial and technical accessibility of the mass to the medium, what are the pivotal moments in the history of photography which marked this phenomenon? Through a reflection on the value and characteristics of portrait photography on daguerreotypes, on *cartes de visite*, on snapshots taken with Kodak Brownie cameras and on smartphones selfies, this chapter will explore whether or not the value of photographic portrait for the masses has changed and the possibility of becoming somehow immortal (being *immortalized*) through a photographic portrait has been maintained through centuries. While this point could be seen only as a positive aspect generated by technological innovation, we will see that there is also a negative impact on society.

Daguerreotype: A Mirror with a Memory

Developed in collaboration with Nicéphore Niépce, the Daguerreotype process was presented for the first time by Louis Jacques Mandé Daguerre on August the 15th 1839 at the Academy of Sciences and at the Academy of Fine Arts in Paris. The rights to the invention were bought by the French government which made them open to the public. In the first years after the official presentation, the main themes represented on the daguerreotypes were still life and architecture (Newhall 2009, p. 19). The exposure times were too long to allow portraits. Subsequent technical improvements shortened exposure times from several minutes to few seconds and so, by 1841, photographic portraits were common. Photographic studios offering portraits on daguerreotypes opened almost everywhere in the Western world (Newhall 2009, p. 30). The vast majority of daguerreotypes still existing today are portraits and were taken in studios fully equipped for that purpose. It is likely that four out of five daguerreotypes in the mid nineteenth century were portraits (Sorlin 2001, p. 32). Face and human body became the main subjects of a different figurative art fully based on photography. They are very detailed in their realistic representation.¹ They offered a contrast with the paintings that had gone before; while photographic images portrayed mortal human beings with their imperfections and defects, paintings could translate an interpreted reality. Painters were able to disguise the deformities and enhance the postures and gestures of the sitters and provide them with accessories and objects to deliver a message (Burke 2001, pp. 25–26). These aspects had a meaning

which usually supported the kings, queens, or aristocrats' portrayed desires of self-representation. A painted portrait of the nineteenth century was not the equivalent of a realistic image, but was rather the result of the collaboration of the artist and the sitter and referred to by Goffman (1969) as meaning of the presentation of the self. In the production of portraits with the new photographic medium, new iconographic conventions were introduced. Daguerreotypes followed those ones of coeval very popular miniatures: sitters were mostly portrayed against a neutral background, with a diffused light usually coming from the ceiling; because of the long exposure time and the risk of blurring, sitters were asked not to smile and to look straight forward into the camera. The photographer was, of course, the intermediary between the sitter and the viewer, but it is the gaze offered by the sitter to the lens which generates that direct connection with the viewer even after centuries. Still today, when looking at a daguerreotype portrait, we feel that we are facing a presence. Walter Benjamin (2015, p. 29) in his "Little History of Photography" argues that these presences became distinct and had an aura because of the reserve of the bourgeois sitters, with genuine innocence in front of the camera (they didn't know what that was), and the contrast tones and long exposures (so that the subjects had to hold the same expression for a long time).²

Daguerreotypes had very sharp details. They also inverted the image (in the same way we see ourselves on a mirror) and represented a mass phenomenon which needed an intermediary (a photographer) to be produced. Every daguerreotype was different, unique and not reproduceable. The invention of the paper negative and, then, of the negative on glass favored the multiple reproduction of the same shot and signed another key moment in the history of photography. The *carte de visite* was one of the products that were promoted after this technical innovation.

¹ Description of the qualities of a daguerreotype by Sir John F. W. Herschel to William Henry Fox Talbot, May 9th 1839: 'It is hardly too much to call them miraculous. Certainly, they surpass anything I could have conceived as within the bounds of reasonable expectation. The most elaborate engraving falls far short of the riches and delicateness of execution, every gradation of light and shade is given with a softness and fidelity which sets all painting at an immeasurable distance' (Newhall 2009, p. 21).

² These elements will return in contemporary photographers like Avedon, Hanzlova, Dijkstra (see Stallabrass 2007).

The Facebook of the 1860s: la Carte de Visite

In the middle of the nineteenth century, 8–12 lens photographic cameras were used to reproduce several images on one single negative plate. These small images were cut and then mounted on cardboard (Fig. 2). Many copies from the same negatives could be reproduced. In 1854, André Adolphe-Eugène Disderi (1819–1889) patented the carte-de-visite system in France and standardized the photograph size mounted on card stock 6×10 cm. Motion was not a problem in this kind of photography as most portraiture took place indoor in a controlled environment with exposures no longer than 15 s.

These photographs were printed directly from the negative and, therefore, not enlarged. The

resultant image was detailed, but not as crisp as a daguerreotype. The use of the negative allowed straight rather than inverted images. The cost of the process was acceptable and the relatively small size of the final product supported the spread of it. People started to collect portraits and have them in their pockets all the time (in the same way we do today with our phones...). Historian Ronald S. Coddington (2016) states that the carte de visite developed into a social media phenomenon, and defined its invention as the greatest since the birth of photography: small, light, and portable, the carte de visite allowed to write on it the details of the person pictured. It represented one more step towards the democratization of photography and was an inexpensive form of social medium accessible to anyone. In the 1862 *London Review* (Coddington 2016), one could read “here there is no barrier of rank, no chancel end; the poorest owns his three inches of cardboard, and the richest can claim no more. When they serve as pegs on which to hang our knowledge and sentiment, our memories and associations, they may be the highest use.” Cartes de visite were a large mass phenomenon which still needed an intermediary (photographer) to realize the final print.



Possible in Photography, Fig. 2 Louis Bechstein. *Portrait of an unknown young woman*. 1880 c. Albumen print on cardboard. (Source: Arese Visconti private collection)

‘You Press the Button, We Do the Rest:’ the Kodak Brownie Snapshot

This is a Kodak circular snapshot photograph of two young children walking down a road, taken by an unknown photographer in the United Kingdom in 1890 c. (Fig. 3). The photograph was taken with a Kodak Brownie camera: a simple, leather-covered wooden box designed for amateur use, which produced circular snapshots two and a half inches in diameter. Invented by George Eastman in 1888, the Brownie camera was sold preloaded with film, and when the whole film had been exposed the camera was sent back to Kodak who developed it, returning the prints and the reloaded camera. “You press the button, we do the rest” stated the advertisement of the Brownie Camera. This process represented another mass phenomenon in the history of photography marked by its easy access to anyone. Despite of the disadvantage of less precise details than a

Possible in Photography,
Fig. 3 Unknown. *Two*
young girls. 1890 c. Silver
 gelatin print. (Source:
 Kodak Collection/National
 Science & Media Museum/
 Science & Society Picture
 Library)



daguerreotype, the Kodak Brownie snapshot had the advantage of not needing an intermediary to press the shutter. There was no need of particular technical knowledge and for this reason it represented another milestone for the mass diffusion of portrait photography. After the expansion of the Kodak Company and the development of the amateur photography market from the end of the nineteenth century, there have been other important technological innovations which contributed to the democratization of the medium (see the invention of the Polaroid system, the disposable cameras, and, obviously, the birth and growth of digital photography). However, it is particularly after the invention of the first smartphone with a camera,³ the broader accessibility of photographic practices to masses, and the introduction of social media platforms that

the diffusion and publication of self-portraits have impressively grown. These aspects made possible the process of democratization of portrait photography and added strong elements for reflection on the representation of the self (Fig. 4).

Selfies: The Online Social Shop-Window

Between March and May 2020, during the lockdown period against the spread of the COVID-19, on the online version of the newspaper *La Repubblica* the famous photographer Oliviero Toscani promoted the initiative “A selfie for Oliviero Toscani. Let’s become reporters of ourselves to narrate our lives during the age of Coronavirus.” Without having any specific technical knowledge, thousands of people sent their selfies to the newspaper and created a large online community. This phenomenon once again highlights the typical characteristics of the last frontier of portrait photography.

³In 1999 Kyocera Visual Phone VP-210 was the first smartphone to incorporate a 110,000-pixel frontal camera (Yegulalp 2012).



Possible in Photography, Fig. 4 Screenshot of the page. https://www.repubblica.it/cronaca/2020/03/31/news/coronavirus_selfie_toscani-252823917/. (Accessed April 15th 2020)

Merriam-Webster dictionary (Selfie 2020) defines the term “selfie” as “an image that includes oneself (often with another person or as part of a group) and is taken by oneself using a digital camera especially for posing on social networks.” Selfies have some similarities with the previous forms of portrait photography, but add new elements as well.

In common with the previous forms of portrait photography (daguerreotype, carte de visite and Brownie Kodak snapshots), selfies involve the

democratization of the medium: anyone with a basic knowledge of how to use a smartphone is capable of taking self-portraits (selfies). Like the daguerreotype, the carte de visite and the Kodak Brownie snapshot, selfies are taken to express the same desire of recording memories. Despite of all these similarities with the previous forms of portrait photography, selfies do not need an intermediate (photographer or lab to develop pictures): we are the first users (Bate 2016; Brus 2017). You see yourself and you choose when to shoot. This is the first main difference of this form of photographic portrait when compared with the previous ones. Selfies are more interactive with the portrayed person. Kodak snapshots had a “personal agency and were a cultural ritual” (Brus 2017, p. 88). They made possible the freedom of self-expression and familiar private life. Like the snapshot, selfies show what we are and where we are. This is the main point of my argument: selfies are the latest element of the process of democratization of portrait photography of the first 20 years of the twenty-first century. They reinforce the dominant position of the sitter as being simultaneously the author and the user. Technological innovation in photography has made possible for everyone to be able to take selfies independently without the help of any intermediary and to make public our faces. Selfies are not individual, rather social acts and can be seen as part of the *Identity Work* theory (Snow and Anderson 1987): we build our identity every day through the way we dress, speak, move. Taking selfies becomes part of the contemporary action of building our identity. As argued by David Bate (2016, p. 37), with selfies “the event is already mediated into an image even before it is perceived.” Since we are looking at a screen, Bate explains that emotions and *experiences are already mediated as images*. In the selfie, face and frontality prevail. The face could be considered the place where experiential and communicative functions are concentrated (AA 2017). As a flat surface on which other organs work (eyes, mouth, muscles, etc.), the face is where movements (through muscles) show passions and emotions. It is unclear and difficult to define the notion of face. It involves expression, recognition, frontality, and look (AA 2017) which are all concerned with

communication. The face is the first of several planes (expressions) which confront you with the others. It is, then, possible to say that the face has multiple expressions, but only one is frozen in a selfie posted on social media. When a selfie is taken, an act of performance is happening. People perform in front of the lens. All the process is connected with the etymological meaning of “face:” *facere*. *Facere* comes from Latin and it means “to make.” “To make” implies the sense of producing something including the act of performing. “The performative aesthetics animate our everyday activities” (Bate 2016, p. 93). Portraits have always been social performances, a social illusion (Burke 2001), but selfies today don’t have the interpreter. As painters in the past interpreted their subjects according to the coeval society (historical moment), today we take our selfies to transmit our image to the social context, and we do not need an interpreter for doing this. We are our own interpreters. It is a physical extension/experience of our body (we see in the selfies that the photographic device is attached to the body of the person portrayed by the shape of the shoulder and the position of the arm). Selfies and their digital world are more complex than a simple portrait. The person portrayed is an agent. Being *homo faber*, he or she become its own *deus ex machina*. As stated by Italian sociologist Vanni Codeluppi (2007), digital photography and its applications involve the individual under several points of view. Selfies are a physical experience. The photographic device is part of the body, part of the physical identity.

Human society has developed the concept of the shop window and, therefore, individuals today adopt this model in its virtual form, an exhibition model for valorization. A selfie is not only the act of producing a self-portrait, but it is taken with the idea of being shared on the web. The moment of its production (the decision of “pressing” the “shutter”) implies already the web-sharing process. The online social shop-window is a concept developed by Codeluppi (2007). Shop windows make useless the physical presence of the owner. They change the relationship between the seller and the client. They make the shop “un-personalized.” Shop windows are also a place of vision: it is like a stage on which a show is going on. It is the

place of self-exhibition. From the eighteenth century (when they were initially invented), the idea of the shop window has had social implications up to the point that we have been influenced in the perception of the self in relation with the others and, in this regard, the exhibition of our private life. This process of becoming objects exhibited on an online shop window corresponds to a sense of alienation, solitude of humans. We decide how we want to appear and create an *avatar*. Upon the creation of this *avatar* and the publication of the image on social media (necessary condition for the existence and justification of the selfie), we become part of a twenty-first century imagined *online* community (Anderson 1991) in the process of self-recognition as a group. Society and technological innovation, once again, are interwoven. This point recalls sociologist Latour’s (1990) reflections on society and technology and their relation to power and domination. His theory (Latour 2005) acknowledges that society is assembled by interactions of human and non-human actors (like smartphones, selfies, and online platforms in this case). Digital production and its actors (human and non-human) initiate complex and dynamic phenomena which involve social interaction and political agenda. The high democratization of portrait photography due to the introduction of smartphones with cameras and social media platforms opens a new chapter of reflections on how this could be seen as positive social progress for the technical development and accessibility, but also its negative implications. Beyond the idea of rhetoric of progress, we must not limit our analysis to simply describe the use of the medium and understand the social implications of technological innovation.

Does photography make some things possible that are actually harmful? Is taking and posting selfies on social networks only a positive and worthwhile activity? The answer is that the democratization of the medium with the broad accessibility to the masses brings with it also negative consequences related to two aspects in particular. Research shows that individuals are psychologically impacted and that there are issues related to the possible abuse of privacy of the online population. As far as the first point is

concerned, studies (Katz and Crocker 2015; Mills et al. 2018; Scott et al. 2018) state that selfies can cause addiction in particular on young users. Often linked to narcissism (Katz and Crocker 2015, p. 1861, 1865), selfies can have negative effects on mood and body image of young women (Mills et al. 2018). Defined as a self-presentation strategy, selfies are pointed as the cause of “changes to mood and feelings of physical attractiveness” (Mills et al. 2018, p. 86). Lastly, it has been highlighted that while these technical innovations support the development of new forms of oral, verbal, and visual communication (Katz and Crocker 2015, p. 1871), they can be detrimental for the level of quality in relationships and involve a decrease of intimacy and support (Houghton et al. 2013).

Two billion photos were estimated to be uploaded on Facebook every month (Stefanone et al. 2011) already in 2011. These numbers have grown: one trillion photos were taken and posted on social media in 2018 (Suciu 2019). Photographs and photographic portraits can turn into a big business. Since 2014, Facebook started using the face recognition technology called “Deep Face,” an algorithm able to identify a face in a crowd with 97.35% accuracy (Taigman et al. 2014). Facial recognition is also used to unlock smartphones. Where is this information going? Are we sure that our faces are not recorded? Selfies can provide invaluable information for commercial or population control purposes. The idea of using portrait photography for police control was already introduced by Alphonse Bertillon (the so-called *bertillonage*) at the end of the nineteenth century (Sekula 1986), but technology applied to modern portrait photography, with location information and facial recognition, expands the possibility of tracking people on a global dimension. Selfies provide an incredible amount of visual information of people. How are our online portrait used and by whom? This is the other side of the possible in photography. Next to the positive aspects listed before, like the wide accessibility to the medium and its democratization, it is important to acknowledge the “dark” side of it with negative consequences on the private and public scale for the individual.

Conclusions

Photographic portraits of ordinary people make an intense communication possible and this communication is in the foundation of the history of photography. Daguerreotypes, cartes de visite, Kodak Brownie snapshots, and modern selfies have contributed to the increasing democratization of photography. Daguerreotypes were characterized by an incredibly sharp mirrored image, which needed the inclusion of an intermediary to be produced. Cartes de visite were not enlarged, therefore quite sharp and still needed an intermediary. The Kodak Brownie snapshots had the same characteristics, but with a lower quality. In the same way as daguerreotypes, carte de visite, and snapshots, selfies have led to the mass diffusion and democratization of the medium, but in all the previous forms of photographic portraiture, technical knowledge was a *condicio sine qua non*. Selfies are accessible and free and raise questions of self-representation, society, community, and identity. They all make possible to represent the self and make us somehow immortal. Selfies also introduce the new concept of web sharing and publication. The image will be used not only in a private context and made public. The introduction of new technologies in portrait photography changed the possible and alongside the positives of democratization probably redirected its applications towards harmful consequences for the modern user. Research shows that there is a negative impact on the psychological sphere of individuals and that there is a high risk of privacy control. What seems to be a funny amusement (shooting a selfie) can actually be transformed in a tool related to power and domination. Are we going to be or are we already part of the “selfie sapiens”⁴ species?

⁴“Selfie Sapiens” (TedX Talks 2016) is a concept introduced by Hollywood producer Niels Juul. In his TedX Talk, Juul stresses the idea that, with the evolution of technology, humans increasingly depend on the use of social media. The young generation, he states, is not able to reflect on the consequences the uncontrolled production of selfies can imply.

Cross-References

- [Aesthetics](#)
- [Creative Development](#)
- [Creativity](#)
- [Illusion in Art](#)
- [Imagery](#)
- [Imagination](#)
- [Inspiration](#)
- [Invention](#)
- [Possible in Visual Arts](#)
- [Semiotics](#)
- [Social Change](#)
- [Sociological Imagination](#)

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Possible in Psychology

Vlad P. Glăveanu

School of Psychology, Dublin City University,
Dublin, Ireland

Centre for the Science of Learning and
Technology, University of Bergen, Bergen,
Norway

Abstract

As the science that studies the mental functioning, behavioral expression and contextual embeddedness of human beings, psychology is well equipped to deal with questions related to the possible and, more specifically, to human possibility (and impossibility). This entry examines seven main branches – general psychology, developmental psychology, individual differences, social psychology, clinical psychology, organizational psychology, and educational psychology – and focuses on: a) how the notion of the possible and associated concepts are employed by key theories; b) what the consequences of focusing on human possibility – and its inter-play with impossibility – are for our understanding of psychology’s sub-disciplines; and c) what new questions we could raise and studies we could conduct that would place psychology at the heart of the emerging field of possibility studies. The aim is to offer a prospective look at old psychological questions, one that integrates agency, indeterminacy, multiplicity, and the future into our concerns, research, and practice.

Keywords

Psychology · Human possibility ·
Developmental psychology · Individual
differences · Social psychology · Clinical
psychology · Organizational psychology ·
Educational psychology

Definition

As the science that studies the mental functioning, behavioral expression, and contextual

embeddedness of human beings, psychology is well equipped to deal with questions related to the possible and, more specifically, to human possibility (and impossibility). And yet, these notions rarely feature within a classic psychological vocabulary and are certainly not often found in textbook, handbooks, or regular volumes (for a marked exception, see Martin and Sugarman 1999). To be fair, the language used by psychologists does refer back to the possible or, rather, to various dimensions or aspects of it, as many entries in this encyclopedia amply demonstrate. From curiosity and imagination to counterfactual thinking, hope, and innovation, human possibility is studied in psychology at an emotional, cognitive, and motivational level in the case of individuals, groups, and even society. However, we are still to fully engage, as a community, with the possible as an authentic field of inquiry for the psychological and behavioral sciences (for a call, see Glăveanu 2018).

There are a number of reasons for this state of conceptual omission. First of all, the notion of the possible might seem rather abstract and become easily relegated to the fields of philosophy and logic. Second, the complexity of the topic makes it hard to “locate” it within any of the traditional branches of the discipline (even if, as we will see in this entry, all its main branches do have something relevant to tell us about human possibility). In an era of increased specialization, the generalist and interdisciplinary approach required by possibility studies can be exciting for some psychologists but challenging for others. Thirdly, and most importantly, while engagement with the possible shapes our life course and defines our existence as human beings, the focus for many in psychology, historically and today, has been rather on impossibilities or the different kinds of determinism – biological, psychological, social – that reduce agency, choice, and alternatives (Immergluck 1964). In other words, the limits and constraints placed on human potentiality have always been given more attention, empirical and theoretical, than its triggers, processes, and consequences. This state of affairs has many roots, from an implicit assumption that living in society necessarily means “taming” an individual’s possibility to act as he or she wishes, to the convenience with which problems and obstacles on the path of such

possibility can be studied in an analytical manner. In any case, the impact on the discipline is the same: a relative lack of interest for the broad topic of the possible and a consistent focus on the impossibilities that condition, if not determine, who we are and who we become.

Of course, as this entry will demonstrate, there are many exceptions to this general observation, and they can be found in all the traditional areas of psychological science. As follows, I will consider seven such domains, each one containing a variety of perspectives or approaches, and focus on: (a) how the notion of the possible, even when not used directly, is embedded within key theories or studies; (b) what the consequences of focusing on human possibility – and its interplay with impossibility – are for our understanding of psychology's sub-disciplines; and (c) what new questions we could raise and what kind of research we could conduct that would help place psychology at the heart of an emerging field of possibility studies. My discussion will necessarily be selective, both due to space constraints and the fact that it is meant to be an invitation for further reflection rather than a systematic review of the existing literature. More than this, my hope is to offer a prospective look at old psychological questions, one that integrates agency, indeterminacy, multiplicity, and the future into our concerns, research, and practice.

The Possible in General Psychology and the History of Psychology

If, as noted above, at present possibility research in psychology is still fragmentary and rather scarce, the history of the discipline paints a different picture. Most of the twentieth century currents within psychology were in fact concerned with human possibility, one way or another. Pragmatists, for example, argued for the bi-directional agency between person and his or her context, both social and material (Mead 1934; Dewey 1934). In psychoanalysis, in contrast, the focus was often on closed opportunities due to early life experiences but also on how a better engagement with the contents of our unconscious can expand self-related possibilities (Freud 1922;

Cooper 2013). Behaviorism, for as reductive as it has been in portraying human action, had its followers harbor the belief that everything can be possible for the person given the right kind of environment (Watson 1930). The cognitive revolution opened up the “black box” of the mind in order to examine the ways in which individuals become active in constructing knowledge and, often, how they change their own mental schemas to achieve new outcomes (Neisser 1967). More recently, the narrative turn (Bruner 1991) made us aware of the power of stories and storytelling to transform our reality, including our view of self, others, and society.

General psychology, as the branch that carries the legacy of all these historical orientations, and many more, offers an interesting picture of the mental processes primarily assumed to help us find and explore new possibilities in life. These are, first and foremost, complex cognitive functions including reasoning, the imagination, memory (e.g., constructive memory, Schacter and Addis 2007) as well as motivation (e.g., self-actualizing motives; Maslow 1943). However, such a view masks the important contribution other, more basic psychological processes, such as emotional responses, make to our engagement with possibility. Surprise, for instance, helps us become aware of a new stimulus in our environment and curiosity can prompt us to explore it further and, in the process, discover new meanings and affordances (Berlyne 1978). Perception itself is infused by the possible inasmuch as it does not build a replica of what exists in the world, but it is always driven by present concerns and already oriented toward the future (Gibson 1979).

General psychology and scholars of the history of the discipline would thus benefit from raising more questions about the ontological roots of human agency, the epistemological orientations that make us sensitive to what expands and restricts our sense of possibility and, last but not least, the conceptual tools needed to capture the former and the methodological tools needed to investigate the latter. What do different schools in psychology tell us about human possibility? How do the mental and behavioral processes we commonly study contribute to our engagement

with the possible and impossible in our daily existence? How could we study both in a balanced manner, one that is analytical enough to make key distinctions and yet holistically able to build a bigger picture?

The Possible in Developmental and Life-Course Psychology

Developmental psychology focuses on the emergence of and changes in our psychological functions and behavior across the lifespan. As such, it studies how our capabilities and related set of possibilities develop in relation to the enablers and constraints of a social, cultural, and material environment. It is tempting to see this trajectory as linear and progressing from “more” to “less” and yet, such depictions are often too simple and overly deterministic (an accusation often aimed at key theorists in the field, e.g., Jean Piaget; Piaget 1928). We do not just pass in life from a narrower to a wider range of possibilities but our engagement with the possible depends on a series of factors, including sex, age, family conditions, social and economic status, cultural background, etc. Even when considering age alone, there are ups and downs in how open and ready we might be to explore new ways of thinking, acting, and being. For example, our self-esteem about what we can do does not progress in a linear manner, but tends to slump during adolescence (Robins and Trzesniewski 2005). Equally, creativity – or, rather, divergent thinking – is supposed to peak during preschool years, then decrease in the first and fourth grades, and finally gradually recover, depending on personal circumstances (Torrance 1968).

This complexity is well captured by life-course approaches to human development that tend to consider the co-development of person and context. In this perspective, the study of human possibility cannot be restricted to an investigation of the individual alone, but necessarily has to consider the role of the environment (from small group to community and society) in shaping what is possible and impossible for the person to think, want, or do. This view of interdependence

is extended to how life-course theorists understand all development and makes them more inclined to follow it up to old age (see the entry on the topic in this encyclopedia). Indeed, if developmental psychology tends to have a bias toward younger ages as a privileged site for growth, a life-course perspective is interested by the interplay between possibilities and impossibilities across the entire lifespan.

A key question for developmentalists to raise is how growing up, living, and becoming old in different cultural contexts around the world impacts people’s sense of personal agency and the domains of their life and society in which they could (or are expected to) express this agency. This would not only help us identify those areas in which development is driven forward by an expanded horizon of opportunities, but also examine what happens when this horizon is actively restricted for personal or political reasons. Second, studies of the cultural life-course could benefit from theorizing the possible as a central human concern and fundamental type of experience across ages and contexts. This would expand existing research into the role of imagination across the life (Hviid and Villadsen 2017) and shed new light on particular contexts such as migration, education, work, etc.

The Possible in Personality, Cognitive, and Neuropsychology

Individual differences psychology studies the psychological profiles of individuals according to various indicators (mostly related to personality and cognition, but not only). Neuropsychology, as the subfield situated at the interface between psychological science and neuroscience, tries to locate these individual differences within neural mechanisms and biological processes. While it might seem that possibility is too complex to ever be “mapped” onto the brain’s activity, it is undeniable that neurological mechanisms contribute to the phenomenon through their relation to psychological functions like sensation, perception, affect, and decision making (although the exact relation between these processes and their

biological basis has been and remains a matter of debate; see Miller and Keller 2000). Relating human possibility to neuroscience also reminds us of the embodied nature of exploring options, taking decisions, and envisioning alternatives in everyday life.

At the level of personality and cognition, there are a series of processes widely assumed to contribute to our engagement with the possible. For personality, these include traits like openness to experience and tolerance of ambiguity. Such dimensions have been consistently shown to correlate with creative expression (Runco 2007) by making the individual sensitive to novel stimuli in his or her environment and able to withstand longer periods of tension, confusion, or not knowing. In terms of cognition, creativity is considered to relate closely with divergent thinking, or our ability to think of many plausible solutions for an existing problem, and lateral thinking, the capacity to pursue even weak connections between ideas that can lead to creative insight (Gilhooly et al. 2015). When it comes to creative imagery, the possibility of building images in the mind and combining them with each other in new and unexpected ways becomes essential (Finke 2014). And if we are to expand the range of interest from cognition to affect and motivation, we can discuss how intrinsic motivation participates, for example, in achieving a state of flow highly conducive for invention and discovery (Csikszentmihalyi 1997).

In summary, the psychology of individual differences can make significant contributions to our understanding of person-level characteristics and processes that participate in our awareness and exploration of the possible. But, as noted from before, it is equally important to understand the expression of these characteristics as a function of the overall situation and life trajectory of the person. Just like neuroscience can provide knowledge as to how the brain operates when we image, create, or innovate, we should not lose sight of the fact that the brain belongs to a body and to a person that is embedded within a specific context, at a certain moment in time. As such, useful questions from this perspective would consider how individual attributes shape and are

shaped by living in a society together with other people and within a history that is, at once, personal and collective.

The Possible in Social and Sociocultural Psychology

The latter are, in fact, the kind of questions typically raised by social and sociocultural psychologists who study the human mind and behavior in their social context. There are, of course, some key differences between the two branches. Social psychology is concerned with interpersonal, group, and inter-group processes and the way they come to shape individual and collective actions. Sociocultural psychology emphasizes the fact that these are not only “external” influences, but the social environment and our interactions with other people are constitutive for the human self (see Mead 1934). Both approaches have thus a lot to tell us about the experience of possibility (and impossibility) for individuals, groups, and communities. However, because of the difference noted above, scholars in these subfields tend to reach different conclusions about human agency in society.

Going through a social psychology textbook, anyone would be forgiven if they believed that other people often reduce our range of possibility or, even worse, lead us to committing unthinkable acts. From conformity and obedience (Milgram 1974) to crowd behavior (Le Bon 1896) and the bystander effect (Latane and Darley 1968), social psychology is full of cautionary tales about social interaction and its consequences. Society is often, even if implicitly, described as an oppressive force that molds and sometimes squashes individual freedom and sense of the possible. The notion of de-individuation, a process presumed to take place in certain social contexts in which the person becomes “less” himself or herself and takes on the attitude and behavior of others, is a classic example in this regard (Diener 1979). On the other hand, socioculturalists would argue that even if some situations push us, more or less, into doing things we would not normally do, it is also the case that there would be no human agency

without social interaction and exchanges of position (Martin and Gillespie 2010) to begin with. Indeed, it is in and through the self–other relation that we experience the world as another person would, develop new perspectives on it, and get to understand our own perspective as one among many (Glăveanu 2020), all of these important, possibility-enabling processes.

Interesting questions to raise within this approach have to do with the kind and type of human relations that constrict or foster our agency (or do both). Do face to face, close relationships matter more in this regard than distant relations established, for example, with people we admire but might have never met or with generic audiences like the general public? Following from this, how do we establish those human interactions that do cultivate the possible in our existence and how do we maintain them? Most of all, how does society participate to individual and collective agency through its norms, values, technologies, and institutions? Instead of adopting reductionist accounts of the collective as mindless or dangerous, possibility studies scholars in social psychology would do well to explore sociability as the origin of creativity and one of its key drivers (Simmel 1949).

The Possible in Work and Organizational Psychology

The interest in creating possibility-enhancing conditions for individuals to perform their tasks well is at the heart of work and organizational psychology. These sub-disciplines, although distinct, are both concerned with how individuals and groups function at the workplace, within an institutional context. If, traditionally, the workplace has been a context in which people exercised their habits and applied their existing knowledge, more and more we are witnessing a radical transformation of mentalities and requires skillsets. Instead of routine and predictability, jobs are demanding the creative handling of uncertainties and quick processes of adaptation to changing conditions (there is little surprise, then, that creativity is listed among other key twenty-first century skills;

Trilling and Fadel 2009). In other words, an openness to and anticipation of what is possible becomes a requirement for most employees instead of a luxury reserved for the few, primarily in managerial positions.

The interest in possibility is reflected by work done on leadership and, in particular, the intersection between leadership styles and creativity (Hughes et al. 2018). Also by the long-standing concern for how groups create and what might be the obstacles but also facilitators of team innovation (Reiter-Palmon 2017). A particular emphasis in this regard, reflecting the high levels of diversity at work, is placed on multidisciplinary teams and the ways in which they use differences as a resource (Ness and Riese 2015). Innovation has been and continues to be a key concern for work and organizational psychologists (Anderson et al. 2014), especially the factors that promote risk taking and help employees both appreciate and look for novelties at the workplace. Organizational learning and change are established subfields of research (Todnem By 2005) that are expanding today in new directions as a consequence of distributed forms of possibility.

And it is precisely this distribution and “democratization” of what it means to find and exploit new and exciting potentials that should be of interest for work and organizational researchers moving forward. The fact that, for instance, it is not only leaders today that are expected to initiate and manage change processes, but each and every employee (the theme of followership is already discussed; see Uhl-Bien et al. 2014). In addition, we need to distinguish between possibilities and impossibilities situated at the individual, group, and organizational levels. While it is easy to assume that the latter frame the former, we need to acknowledge the fact that change takes place at many levels within an organization and that, sometimes, individual actions can open up new horizons of possibility for everyone else. Just as top-down transformations can still be participative in how they are implemented. Of course, the question is how these change processes are received and how organizational climate and culture cultivate (or not) openness to novelties,

respect for difference, and an authentic curiosity about the future.

The Possible in Clinical and Therapeutic Psychology

I have noted before that living within worlds of possibility and developing possible selves is the ontological condition of human beings. Clinical psychology, and especially the study of psychopathology, helps us problematize the issue of what is “normal” and focus on conditions that, one way or another, restrict certain possibilities for the individual (while potentially opening up others, previously unnoticed or underused). It would be simplistic, though, to associate clinical psychology with the sign of reduced possibility. On the contrary, we can use its study as an opportunity to expand our own understanding of what is normal, “natural”, or universally human. As the subfield of ethno-psychiatry shows us (Gaines 1992), we need to be cautious when assuming that some specific possibilities need to be noticed or actualized in order to have a fully human existence. These assumptions usually betray Western-centric assumptions about how life should be lived and, especially, what counts as worth doing in life. On the other hand, for some time the study of disabilities has been moving toward an understanding of special conditions as potential resources when seen from a new perspective (e.g., the idea of being differently abled). And also toward helping those being diagnosed and their care-givers to actively explore such possibilities. Last but not least, the diagnostic itself can be a useful for making meaning about one’s condition but it could also be used as a label for what becomes possible and impossible for the person, especially when employed by other people (for discussions about diagnostic culture and psychiatry see Rose 2018).

Therapeutic and counseling psychology, conversely, are much more directly oriented toward appreciating the person’s potential and helping him or her achieve it, above and beyond the constraints of a diagnostic. Therapists work with their clients to help them understand the root of

experienced impossibilities and think of ways, if not to overcome them, then at least to turn them into opportunities for personal transformation. While there are many therapeutic approaches – ranging from psychoanalysis to cognitive-behavioral therapies and humanistic or existential orientations – this possibility-extending ethos is central for most. Some therapies, especially drawing on humanistic psychology and a client-centered philosophy (see Rogers 1951), are explicitly aimed at creating the context for an in-depth exploration of the possible let by the client himself or herself. Ultimately, the kind of questions clinicians and therapists can raise more often concern precisely the consequences of opening up such spaces for the person and for the counseling relationship. Confronting and understanding one’s impossibilities is a fundamental part of the process and these branches of psychology can shed new light on the best ways in which patients or clients can be helped through this difficult process that is, ultimately, one of self-transformation as much as it is one of self-discovery (Hermans and Hermans-Jansen 1995).

The Possible in Learning and Educational Psychology

The related branches of the psychology of learning and educational psychology are explicitly concerned with cultivating human possibility, specifically through learning and education. Learning is, just like creativity, an act of engaging with the possible by expanding the ways in which the person understands and acts on the world. And yet, oftentimes, the process of learning is seen as primarily one of acquisition and not necessarily transformation of knowledge. Jean Piaget usefully considered, in this regard, that the development of intelligence involves both assimilation and accommodation (Piaget 1928) and that, in other words, the individual does not just acquire a new mental schema but changes, through accommodation, his or her existing schemas in order to anchor the new into the old. Of course, there are other possibilities opened up by learning and intelligent behavior; for instance, the new stimulus can be

explored and transformed before it changes existing knowledge. Also, we can question whether “pure” assimilation exists in the sense of adopting the new without any additions or emergent processes. To learn, thus, is not reduced to reproducing, within one’s mind, what already exists in the world or the minds of others; it is necessarily a dynamic, adaptive, and transformative process in which learners consider not only what is the case, but also what could be and how things become.

This possibility-based understanding of learning has been central to an educational psychology focused on teacher–student interactions within both formal and informal contexts. Just like general psychology, this branch uses different approaches – from behaviorist to cognitivist and experiential – in order to derive principles for education. Some of these, as noted before, can be more restrictive of the possible, especially those operating with the basic stimulus–response schema of conditioning. This is how, for example, educators are often accused (still) of harming rather than enhancing their students’ creativity and imagination (Robinson and Aronica 2015). It is the emphasis on rote memory and the reproduction of knowledge without any significant transformation that underpins this critique. And yet, if we look toward operant forms of conditioning, we soon notice that learners do have some agency in determining their own “stimulations.” These insights have been carried over by Bandura (2001) into his social cognitive theory. This approach is based on the bi-directional relation between person and environment and brings to the fore those mental constructions and anticipations that drive our behavior and, ultimately, our success in education and beyond. Self-efficacy, for instance, is a concept based on the incorporation of possibility within one’s self understanding (see the dedicated entry in this encyclopedia). These conceptions are not new. Lev Vygotsky, from the first half of the twentieth century, promoted a sociocultural view of learning and education based on the zone of proximal development (see, as well, the dedicated entry in this encyclopedia) or the notion that learning drives development by creating a space of possibility for our

actions, especially when interacting with others (or more capable peers, in Vygotsky’s terms).

New questions for learning and educational psychologists when it comes to human possibility have to do with the role of power and inequality in society and how these impact what learners (and teachers alike) can think and do. Paolo Freire raised this important issue decades ago (Freire 1973) and his efforts to work with marginalized and oppressed communities toward their emancipation resonate today with the struggle against oppression and discrimination of many people around the world. Pedagogies of the possible (see Glăveanu 2020) can only be based on a critical understanding and engagement with the world in order to reimagine it through the process of learning and education.

Conclusion

In conclusion, psychology as a multifaceted discipline has a lot to offer any scholar interested in possibility studies. By focusing on the mental states, actions, and experience of people in a variety of contexts, as well as across time, psychology is also very close to other disciplines and their own approaches to the possible. For example, general psychology is connected to philosophy, as the two disciplines have been historically. Cognitive psychology builds on the achievements of cognitive science, neuroscience, and artificial intelligence. Social and sociocultural psychology are close to sociology and anthropology, organizational psychology to management, and educational psychology to pedagogy and the sciences of education. In each case, psychologists can inform and also learn from the approaches and findings of connected disciplines. This is how, for example, the possibility-related vocabulary used by psychologists (including divergent thinking, self-efficacy, counterfactual thinking, etc.), can be enriched by philosophical approaches to the imagination, managerial views of innovation, or sociological studies of agency and structure.

If psychology is to fully contribute to these dialogues, however, it needs to strengthen its commitment to a dynamic and relational ontology

(Slife 2004) and an epistemology that considers the world as mobile, multiple, and open to the possible and to the future. We also need to develop methodological tools that do not immediately stabilize or reify reality but allow us to study psychological phenomena as they emerge and develop in (inter)action. This kind of work is underway in many subdisciplines of psychology and we can hope that the notion of human possibility will continue to inspire theoretical development, empirical research and, most of all, the practice of psychologists in the twenty-first century.

Cross-References

- ▶ [American Pragmatism](#)
- ▶ [Creative Self-Efficacy](#)
- ▶ [Creativity](#)
- ▶ [Curiosity](#)
- ▶ [Emotion](#)
- ▶ [Flow](#)
- ▶ [Imagery](#)
- ▶ [Imagination](#)
- ▶ [Old Age](#)
- ▶ [Pedagogies of the Possible](#)
- ▶ [The Possible in the Life and Work of Lev Vygotsky](#)
- ▶ [Tolerance of Ambiguity](#)
- ▶ [Zone of Proximal Development](#)

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Possible in Scriptwriting

Samira Bourgeois-Bougrine
Université de Paris, Paris, France

Abstract

Scriptwriting is a creative and collaborative practice of utmost importance for the film industry. It opens up various possibilities for

the story to be told. The process of scriptwriting resembles the act of wandering through a “maze of possible” including true paths (good ideas) and blind alleys (unsuccessful ideas/blocks). The present entry focuses on how the scriptwriter navigates this “maze of possible” from the preliminary stage of a “formless” situation where there is no structure to the “exit” of the maze represented by “final” version of the script. More specifically the following questions will be addressed: What are the origins of cinematic ideas? How is an idea nurtured and developed into a script? Answers to these questions will be grounded in the neuropsychology of creativity. The conclusion will address possible research questions specific to scriptwriting such as “how might creativity be improved to reduce writer’s blocks? How screenwriting might operate in cinematic virtual reality? Could creative scripts be considered worthy of publication?

Keywords

Scriptwriting · Creativity · Psychology · Neuroscience · Attention

Introduction

Alfred Hitchcock said, when asked what is the most important part of filmmaking, “the script, the script, the script” (Truffaut 1968). A script is a written work for a film, documentary, TV show, or video game. Of these, the present entry will mainly address motion picture screenplays, which are considered as the blueprint, the heart, and the backbone of a movie. A written script includes mostly characters’ names, their movements, actions and dialogues, descriptions of settings, information about where the scene is set (inside or outside), its specific location, the time of day, etc. It is also expected to conform to a proper formatting that specifies how these elements are presented on the page, the font size and line spacing, etc.

Beyond these specific standardizations, writing a script opens up possibilities and provides alternative ideas. It involves imagination, creative

writing skills, as well as decision-making and problem-solving skills. Previous research (Bourgeois-Bougrine et al. 2014) has revealed a series of distinct but interrelated stages in screenplay writing starting, in general, from a long and enjoyable phase of impregnation, followed in some, but not all cases, by a formal phase of structuring (writing up an outline and or treatment) and, finally, intensive periods of writing and rewriting the script. These three stages, and in particular the multiple and concrete decisions to be taken within the writing stage, resemble the act of wandering through a “maze of possible” sometimes laboriously and sometimes effortlessly with a feeling of being “carried over,” described as being in a flow state (Csikszentmihalyi 1996). Scriptwriters prepare for this “journey,” create “maps,” and then enter the maze navigating through various true paths (good ideas) and blind alleys (unsuccessful ideas/blocks/obstacles/constraints/problems). The writer progresses down the maze by trial and error, retracing his or her steps, progressing meticulously by seeking advice, consulting and updating the “map,” responding to internal and external stimuli or cues, etc. Frustration increases after experiencing many obstacles, entering several blind alleys, going back over and over and getting lost. However, the writer may traverse the maze quickly in an intuitive or automatic way if the path to follow is clearly indicated (e.g., book adaptation) or if he or she had already experienced a similar maze (e.g., TV series format) and had learned how to navigate by developing a sort of cognitive map of where many of the blind alleys are (Bourgeois-Bougrine et al. 2014).

The present entry uses central ideas from a number of psychological and neuropsychological theories to highlight how the scriptwriter navigates this “maze of possible” from the preliminary stage of a “formless” situation where there is no structure to the “exit” of the maze represented by “final” version of the script. Moreover, using a same set of interviews that informed a previous work (Bourgeois-Bougrine et al. 2014), this entry mines those same discussions for answers to some of the most fascinating questions: where do initial cinematic ideas or concepts come from and how

do new ideas emerge throughout the writing process? The conclusion will rise possible research questions specific to scriptwriting such as how might creativity be improved to reduce writer’s blocks? How screenwriting might operate in cinematic virtual reality? Could creative scripts be considered worthy of publication?

Where Do Original Cinematic Ideas Come From?

The psychology of creativity considers creative action, such as scriptwriting, within the creative problem-solving framework (Lubart et al. 2003, Bourgeois-Bougrine et al. 2014). A screenwriter who seeks to express his or her feelings in an original way is considered to be involved in solving a problem. Creative problem solving involves the ability to make nonobvious connections and the ability to generate new solutions previously unknown (Lubart et al. 2003). A problem¹ can be defined as: “A situation for which the organization has a purpose but does not have a known means to achieve it.” Einstein (in Getzels 1979) made a distinction between the detective and the scientist both of whom seek solutions to problems: “For the detective the crime is given, the problem posed: Who killed Cock Robin? The scientist must at least in part, commit his own crime.” Under this understanding, creative action can either start with a demand (problem posed) or originate through the creator. Depending on whether the “problem” already exists (a book to adapt, an existing script) and who propounds it (self or others), the creative process would be more or less demanding. So, in a manner similar to a detective, a scriptwriter could be hired by a director, a producer, or a sponsor to adapt a book for the screen, modify an existing script, etc. Alternatively, like a scientist, the scriptwriter would have to come up with the initial idea of the film. According to some scriptwriters, this initial idea of a film is something that “*haunts them or talks to them*”; they have a “compelling” need to

¹ http://edutechwiki.unige.ch/fr/R solution_of_problem

tell a story and it results from a coincidence or happens by chance, (e.g., it could be triggered by a photo, by something seen or heard) or it is linked to something autobiographical or which resonates with the writer's own experiences, etc.

Scriptwriting, as in any artwork, does not arise from conceptual void but from an extensive knowledge base (Bourgeois-Bougrine et al. 2014; Mace and Ward 2002). This knowledge is constantly developed as a result of the writer's previous experience, explicit and implicit understanding of filmmaking techniques and skills, personnel interests, historical and contemporary cinematic and art knowledge, etc. Professional scriptwriters are indeed always "receptive," like "sponges," tend to take note of diverse information and record interesting ideas for possible future use and are open to internal and external stimuli. Openness, which is described as an appreciation for aesthetics, preference for novelty and intellectual curiosity, is one of the personality traits that is strongly associated with creativity through the expansion of the knowledge base and serendipitous encounters (Costa and McCrae 1992; Batey and Furnham 2006; Kaufman 2013). Indeed, it has been suggested that high open-minded individuals have defective filters for irrelevant stimuli, which then leads to more thoughts entering consciousness, which, combined in interesting ways, form creative ideas (Batey and Furnham 2006). Recently, Agnoli et al. (2015) established that attentive processing is a central psychological mechanism to explain the relationship between openness and creativity. Using eye-tracking methodology, they showed a moderating effect of irrelevance processing, with creativity reaching higher levels in individuals characterized by a high level of openness and who gave attention to irrelevant information. Indeed, creative people have been characterized as tending to have more defocused or broad attention span leading them to attend to a large range of stimuli at any one time (Kasof 1997). Individuals with chronically narrow attention span tend to filter or screen out irrelevant stimuli from awareness and, therefore, are unaffected by their surroundings. According to Dorfman et al. (2008, p. 1383),

"defocused attention may be caused by reduced cognitive inhibition, where inhibition is understood as a mechanism that can restrict the flow of information into the focus of attention. The consequence of reduced cognitive inhibition is that more information is allowed into the focus of attention for processing." Martindale (2002) suggested that rather than having a stable disposition toward defocused attention, creative individuals adjust the scope of their attention according to the task demands: when solving problems that call for creativity, they tend to have defocused attention, and in other situations, they are better than uncreative people at narrowing the focus of their attention.

The question related to the emergence of the initial cinematic idea echoes with "problem finding," which correspond to the stage of "formless" situation where there is no structure, no task, no problem to solve (Getzels 1979). Creative action is not determined in advance and difficulty for writers resides in being able to recognize the potential of an idea as suggested by a scriptwriter (Bourgeois-Bougrine et al. 2014):

For an original script, I start from a situation, which seems interesting or funny. Then I try to see where it will lead me. In most cases, I don't know where I am going. Things build up gradually, and the meaning of all this emerges very late and sometimes not at all.

The myriad of ideas to explore within the maze of possible requires the ability to sense the artistic potential of an idea and the way to unleash it. To quote Getzels (1979, p. 167), ideas do not present themselves as "problems capable of resolution or even sensible contemplation. They must be posed and formulated in fruitful and often radical ways if they are to be moved toward solution. The way the problem is posed is the way the dilemma will be resolved." As Einstein (in Getzels 1979) put it: "The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old questions from a new angle, requires creative imagination and marks real advance in science." As reported below, screenwriters, in general, have

difficulty getting started when considering writing a script based on an idea; they “*turn around the film idea*,” reading, and collecting information, etc., before initiating the actual writing:

I am starting a new project and currently I am turning around. It's a kind of ritual: I am turning around the topic like wolf around its prey

I find it hard to tackle the job head on. I first circle, I turn around it (*je tourne autour*). when I find a good idea, or a scene that I like, I turn around it. Generally, I do a lot of things that are indirectly related to the work, I read a lot, I copy many texts that interest me, I see a lot of movies, I listen to a lot of music... I do many things around the work which I think will be the foundation of the work itself.

When a scriptwriter is commissioned to write a script based on a director or a producer's concept or original idea, the creative process starts by meetings the sponsor in order to understand the demand and extract the gist of the original idea of the film. During the initial meetings or “sessions,” the writer considers the script project in terms of “why” rather than “how” and, just as in “talking therapy,” he or she tries to understand the director's motivation behind the project of the film through daily discussions without censorship. This stage is equivalent to the definition or reformulation of the problem to be solved. The openness, trust, and pleasure in sharing ideas and desires that characterize these meetings might lead to a positive mood and a feeling of freedom to explore unconventional ideas about the story to be told and to develop the personality and the biography of the main characters. In this phase, there is a lot of “why...”, “I would like...”, “what if...”, and openness to whatever comes. This collaboration engenders a myriad of possibilities. Illustrating the collaborative nature of creative endeavor, one of our participants noted that:

Speaking more generally, an artwork is largely a ‘delivery’. In the film industry, it is a ‘delivery’ involving lot of midwives as well as surgeons and hospital staff. Producer, technicians, writer, etc., should help a director to give birth to an idea dear to his heart. (S18).

Moreover, research suggested that events happening in the distant future (like, for example, a

film project which takes up to 4 years to be completed) are represented in a more abstract, structured, high-level manner. According to construal level theory (CLT), a framework that links processing styles and psychological distance (Lieberman et al. 2007), processing information in a global, abstract, and explorative way helps in finding creative solutions and ideas (Förster and Dannenberg 2010). At the same time, the feeling of being free from constraints (Steidle and Werth 2013) and in a positive mood (Labro and Patrick 2009) elicits abstract thinking and promote creative idea generation. Moreover, Lieberman et al. (2007) showed that individuals “would engage in an activity at a later point in time when it was described in abstract (rather than concrete) terms, when they had first considered why (rather than how).” As suggested by McCrea et al. (2008), mental association between level of abstractness and temporal distance is a bidirectional relationship: events that are distant in time tend to be represented more abstractly than events that are close in time and the level of representation of an event have effects on the time when the activity is performed. In other words, procrastination increases when thinking about the task in abstract terms rather than in concrete ones.

Indeed, scriptwriters put lots of emphasis on allowing the mind to wander freely: reflecting, thinking, daydreaming, reading, and collecting information, etc., before starting the actual writing. The findings of neuroimaging studies of the brain indicate that when individuals are given the instruction to “relax and simply think about whatever comes into their mind,” brain areas, which are referred to as the default mode network (DMN), are engaged. The DMN is activated by diverse forms of tasks that require spontaneous activation of autobiographical and semantic memory, perspective-taking, envisioning the future, and moral decision-making (Buckner et al. 2008). As pointed out by Binder et al. (1999), such activations are adaptive: “by storing, retrieving, and manipulating internal information, we organize what could not be organized during stimulus presentation, solve problems that require computation over long periods of time, and create

effective plans governing behaviour in the future.”

These conscious and unconscious processes result in the extraction of the gist of the original idea of the film and boost the associative search for creative solutions using the collected information, introspection, past experiences, and thoughts. The biography of main characters is refined and a schematic representation or “map” of the story emerges turning an abstract goal into the more concrete specific steps necessary to achieve the goal. However, some writers who, in general, disliked the development of formal map or script architecture seem to wander aimlessly in the maze of the possible:

“I’m going in all directions, like a hunter who wanders in a forest.” / “I start writing the scene, I know roughly where I want to go, even though I do not really know how to get there, etc.”

How a Creative Idea Develops into a Script?

The process of idea development refers to the period of writing and rewriting the script. The writing process could be considered as a cycle, alternating between generating creative ideas and evaluating their potential through “a continual testing of and discarding of ideas as to their suitability for the story” (Nelmes 2007, p. 111). Quite often while developing dialogues and scenes, what has been planned can be abandoned; new ideas are generated, tested, and implemented which will have an impact on what has been already written, a classic “domino effect.” The choice between new alternatives or ideas leads to the rewriting or suppression of previous dialogues and scenes. These processes occur in a cyclical manner until the task is completed.

Indeed, literary creativity, which involves the ability to flexibly combine concepts stored in memory to form novel and useful associations, requires the co-activation of large brain networks: the default mode network (DMN) which is known to support the divergent and open creative process and the control executive network

(CEN). The CEN is a goal-directed processing which exerts a control on our thoughts and actions, controls attentional shift from the external word to internal thoughts, facilitates flexible switching between semantic categories during memory retrieval and in mitigating sources of interference by suppressing salient conceptual knowledge. Recent study showed that during creative writing, expert writers relative to non-experts demonstrate enhanced brain activity in the CEN during creative writing (Erhard et al. 2014). Moreover, writing experience index (number of weekly writing hours and number of years of practice) is positively correlated with the gray matter volume in brain regions linked to executive functions, such as working memory and planning processes in complex cognitive tasks (Neumann et al. 2018).

Experience seems, indeed, to facilitate the automatization of some processes as complex as building a story or adopting a 90 min:

I have the impression of having acquired a certain competency regarding these fundamental questions: how to construct a story, depart from one already written, how to write dialogues that don’t sound too awkward, how to enter a scene and end it without getting lost.

Writing is a matter of ‘breath’. A story of 1 hour 30, it is a bit like an athletic discipline: the more you practice, the more you are comfortable. But I’m useless when I have to write a short film! What’s crazy is that, almost by magic, by experimentation as well, the rhythm of 90 minutes becomes natural. I have great difficulty with other rhythms.

The discourse of scriptwriters suggests that the creative writing process is driven not by the plot or the structure, but rather by the characters, the emotions they elicit, and consequences of their “actions” on past, present, and future events. In addition, they reported that as one “*gets into the skin of the main character*,” “*understands the character*,” and “*makes him talk*,” they experience often enjoyable moments where intuition, unconscious, and automatic process take over the generation and selection of creative ideas. The empathy with the characters leads to the feeling that they came to life and make the choices instead of the writer,

“hijacking or guiding the story line in unexpected ways” as reported by Australian fiction writers (Paton 2012). This sense of being “carried over” designates a temporary loss of self-consciousness characteristic for the flow state (Csikszentmihalyi 1996). Could the co-activation of default and executive networks, which reflect focused internal attention on thought content, explain the deep concentration that characterizes the flow state? Future research in neuropsychology of creativity could explore this hypothesis in order to develop trainings or inductions methods to facilitate the occurrence of the enjoyable and creative moment of flow state.

However, the creative process, which is associated with positive emotions such as pleasure and jubilation when a bright idea is found, becomes painful when writers experience blocks. Frustration increases when experiencing lot of obstacles, entering several blind alleys, going back over and over and getting lost within the maze of the possible. Sometimes “*the created characters or the situations they are in lead to impasses or deadlocks.*” Solving these problems, obstacles, impasses, or deadlocks involves different strategies that could be used alternatively: a confrontational strategy; seeking support and opinions; and rational analysis (Bourgeois-Bougrine et al. 2014). Writers spend hours “fighting” with the problem, which leads often to fixation or mental block. It becomes impossible to go back, and impossible to consider other solutions:

There are moments when you feel it just turns around and you are not getting anywhere

Often it is the case that we struggle for a very long time only to settle the problem with one line . . . But if I struggle it is because I am not wise enough to notice that the situation is not good. I try to solve the problem artificially, but the characters cannot exist in that situation.

Interestingly, solutions might also emerge when scriptwriters step back from the manuscript or do something that is not related to it. Indeed, the solution could occur during unrelated tasks (e.g., emptying the washing machine, bathing a child,

taking public transport, or working alternatively on another film project in a less demanding phase, etc.):

I struggle and when I am saturated with a project, being able to switch to another project frees my mind and allows me to find answers to the first. . .

Like in painting, you need to let it dry. You write a version and then let it rest . . . then retake it. Because it's very hard to see it when you have your nose in it. It is exactly like in painting: if you have blue and want it to be red and it is not dry it will become brown.

Studies on the deliberation-without-attention effect show that a period of unconscious thoughts or incubation while making complex decisions can actually lead to better decisions than a period of thorough conscious deliberation (Dijksterhuis et al. 2006). There are at least two hypotheses that could explain the assumed superiority of unconscious thought: it might be the product of an active unconscious processing capacity of information or the result of a differential rates of forgetting of attributes of the various options. Previously acquired knowledge and prior experiences can indeed limit creative idea generation, leading to mental fixation. A distraction with an easy task, a period of rest or incubation would, therefore, help to overcome the constraining influence of recently activated knowledge.

Finally, writing a script for a movie is a deeply collaborative creative process. It involves iterative phases of private writing of drafts and collaborative interactions to analyze these texts and provide feedback that leads to a new draft. The process of rewriting several versions of a script seems to be universal among screenplay writers, engaging often the director and the producer of the film as well as actors and other members of the film crew. Ultimately, a final version of a script is virtually impossible as scripts are often modified before and during the shooting, as well as during the movie editing stage. This leads to a working context which is simultaneously individual and social and fosters interactions with others that can be, at times, a source of tension and frustration (Condor 2010) when the contribution of the scriptwriter or co-writer is not

recognized enough, leading to uncomfortable and ambivalent feelings.

Conclusion

In contrast to the myth that creative ideas result from a “dreaming” person having a flash of insight, new ideas and solutions are the result of an ongoing knowledge base development, discipline, and daily hard work (Paton 2012; Bourgeois-Bougrine et al. 2014). Professional screenwriters engage in conscious work even when not inspired, focusing their attention on the task, developing ideas, solving problems, and taking decisions or making choices between different alternatives. The neuropsychology of creativity highlights possible underlying mechanisms that promote the emergence, the selection, and the implementation of creative ideas during scriptwriting. Creative production is considered to be a result of both uncontrolled spontaneous associative thinking and controlled goal-directed effortful thinking. The writer could traverse the maze quickly in an intuitive or automatic way if the path to follow is clearly indicated (e.g., book adaptation) or if he or she had already experienced a similar maze (e.g., TV series format) and had learned how to navigate by developing a sort of cognitive map of where many of the blind alleys are.

Among the possible research questions in scriptwriting, one which holds a particular importance for script development is “how might creativity be improved to avoid or reduce mental fixation?” Recent studies have examined the impact of different motor and cognitive trainings or inductions methods on creative performance (Abraham et al. 2019, Oppezzo and Schwartz 2014). The aim of these methods is to induce a change in the usual pattern of information processing to improve creative cognition. However, more research is needed to clarify the mixed and sometimes contradictory findings (Abraham 2018). For example, due to the diversity of the experimental tasks and design, there is no agreement with regard to the role of

inhibition in creative idea generation and fixation. Future studies should explore the issue of attention control in the context of scriptwriting.

Another research question could focus on the status of the script. A screenplay is almost never seen by audiences outside the film industry leading in some cases to a lack of social status, public and media recognition for scriptwriters (Simonton 2011; Bourgeois-Bougrine et al. 2014). Some scholars even wonder whether creative scripts could be considered worthy of publication. Indeed, Baker (2016, p. 1) argued that scriptwriting is a practice that deserves scholarly attention and that academic scriptwriting has a strong critical research. He indicates that “there has been a persistent idea that scripts are not stand-alone works but merely ‘blueprints’ for the films or television programmes based on them. This situation is now changing, with a number of academic journals publishing screenplays as creative research and treating scripts as texts in themselves, irrespective of production.”

Finally, a promising question could be: how screenwriting might operate in the emerging medium of immersive or cinematic virtual reality (CVR)? Contrary to traditional 2D movies where the viewer discovers the story as constructed by the scriptwriter or filmmaker, CVR allow the viewer to decide where to look around the whole 360-degrees. He or she could miss important visual details of the story and become lost or confused. As CVR is 360-degree media, recent studies highlighted the need to explore new ways of thinking and seeing the potential for the development of screen ideas in this medium (Ross and Munt 2018; Rothe et al. 2019). The questions raised by scriptwriting scholars are as follows: how to guide viewer’s attention in an unobtrusive way? What format can be used for delivery of the CVR screenplay? How to address the question of spatialization of the screenplay for omnidirectional movies? What is the impact of immersive movies on people’s thoughts, behaviors, and emotions? In the context of CVR, writers will have to adapt to a dynamic maze of possibilities rather than static one.

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Possible in Sociology

Steven Lybrand¹ and Richard Randell²

¹Independent Scholar, Palo Alto, CA, USA

²Webster University Geneva, Geneva, Switzerland

Abstract

Sociology – as both science and mode of societal self-reflection – was made possible by the conjunction of mid-nineteenth century European philosophical thought with the historical crises erupting within the emerging industrial societies in the West. Sociology, once established, evolved to make possible a proliferation of perspectives for studying a newly constituted ontological space identified by Auguste Comte. What, exactly, that ontological space denotes and how it is to be studied is at the center of debates within contemporary sociology. For Comte, sociology promised nothing less than a scientific blueprint for the reconstruction of society; a possible world that would be free of conflict, strife, and, especially, what he considered to be the disease of the West: individualism and its quixotic attachment to freedom of thought. To others, such a deterministic, authoritarian perspective was a precursor of the totalitarian societies of the twentieth century. Understanding this genealogy and imagining what possible worlds might await us is the unfinished business of that discipline that goes by the name “sociology.”

Keywords

Agency · Authority · Auguste Comte · Émile Durkheim · Empiricism · Epistemology · Equality · Michel Foucault · Freedom · Hegel · Injustice · Marx · C. Wright Mills · Ontology ·

Social order · Personal transformation · Positivism · Progress · Sociological imagination · Utopia · Max Weber

Synonyms

Action research; American pragmatism; Creating the future; Ideology; Imagination; Reality; Social change; Utopia

What Is Sociology?

The term sociology denotes not only an established academic discipline but also a broader intellectual perspective for understanding behavior, institutions, and cultural life. Sociology occupies a liminal disciplinary and intellectual space. On the one hand, it has carved out for itself a space as a legitimate social science. On the other hand, it is held in suspicion by those who see sociologists not as rigorous scientists but as all-purpose commentators on social and political life. Allegations that sociology is merely common sense or gussied up ideology masquerading as a science have accompanied the discipline since its inception (cf. Marx's [1866] critiques of Comte's “shitty positivism” and his curt dismissal of the Utopian Socialists). Where one stands on the reputational divide in respect to sociology will determine what one thinks sociology might or might not make possible (or declare impossible).

One straightforward and seemingly uncontroversial way of fixing what academic sociology *is* involves looking at what sociologists *do* when doing their job as sociologists. In addition to producing texts, sociologists teach and create and maintain disciplinary institutions, such as professional associations and academic departments in universities and colleges. They also work as intellectual workers in government and industry. A complete resume here would require the recounting of a comprehensive history of the discipline, in the diverse locations it has appeared, as well as an account of the current

state of the discipline, the objects of study constructed by its subfields, and a summary of the diverse theoretical paradigms employed by sociologists across its subfields of research. The construction and maintenance of all these institutional and cultural spaces may be considered one of the achievements of sociology. It has made *itself* possible.

To summarize the history of the institutionalization of sociology is beyond the scope of this entry. The reader who wishes to appraise herself of the current empirical fields and theoretical paradigms of sociology could do worse than peruse a contemporary introductory textbook. Perusing the lists of subfields of sociology of the International Sociological Association, or the American, British, French, German, and other national sociology associations, will also give the nonsociologist a reasonable overview of the breadth of contemporary sociology. There is a sociology of virtually everything. There are few aspects of human life, from the mundane and micro in scope – the routine activities of everyday life – to the exceptional and macro – social movements, wars, and revolutions – that have not been studied by sociologists. Since its origins in the mid-nineteenth century, sociology has taken as its potential subject matter virtually all of contemporary, and past, human existence. It is not, of course, the only academic discipline with such an ambitious resume. History and anthropology and philosophy have also laid claim to such a wide-ranging intellectual agenda.

What, then, is specific and unique about the texts of sociology? Beyond the fact that they were written by professionally certified sociologists, what makes an empirical study or a theoretical text an instance of sociology? Do the credentials and institutional location of its author suffice for designating it as “sociology,” or is it enough that someone write about intellectual problems that fall within some assumed territorial boundaries that the discipline has come to acquire over time? Put another way, does sociology possess some kind of essence? This question invites a less straightforward and uncontroversial way of fixing what academic sociology might be. Across

the myriad collection of sociological concepts, theories, paradigms, and empirical studies, is there something that unites all these diverse concerns?

Medicine, Michel Foucault (1994) argued, may be considered the first of the human sciences, in having constructed “man” as an object of scientific study. Whereas previously it was only the external world – the world of “nature” – that had been constructed as an object of scientific study, modern medicine marked the transition to a new episteme wherein the human being was configured as both subject and object of the newly developed scientific gaze. Sociology sits within this epistemic reconfiguration. Its focus has been not the individual in isolation but the properties of human collectivities. Although reflection on phenomena related to human association predates recorded history, the burst of social thought following the French Revolution was seminal in the creation of this new discipline (Manuel 1962, Salomon 1962). Auguste Comte (1798–1857) is recognized as the founder of what was to become the discipline of sociology. Comte’s construction of sociology as a “positive science” was primarily a distillation of streams of thought bookended by the Enlightenment and Romantic periods within Western social thought.

A science of modernity, sociology developed in Europe following the collapse of feudalism and the *régimes anciens*, and the French Revolution; the Enlightenment and subsequent death of God, as Friedrich Nietzsche diagnosed our predicament; and the rise of capitalism, industrialization, and later of Soviet communism. A product of modernity, sociology has a triple genealogy and intellectual inheritance: (1) the scientific study of societies, often seen as in “crisis”; (2) the modernist faith in progress coupled with the belief that scientific knowledge is a necessary prerequisite of that progress; and (3) the belief that a science of society can guide and accelerate human progress and happiness within the societies that fall within its gaze. The history of sociology is performative proof that it is possible to construct an object of scientific study designated as “society,” and

reflect upon, analyze, categorize, critique, and transform that object. A less charitable view of such a grandiose project for sociology holds that Comte's (and Herbert Spencer's) grand pronouncements for sociology, as Isaiah Berlin (1959/1969) once put it, produced only "huge half-forgotten hulks in the river of nineteenth century thought."

To define sociology as a science of society implies that among the large bibliographic textual output produced by sociologists, not all of it (even under an extended definition of what "science" might be) can be classified as examples of a scientific – i.e., "empirical" – investigation of society, namely as "sociology." Counterintuitively, under this definition, definitions of what sociology might or might not be cannot themselves be considered as instances of sociology. This very entry would be one such instance, thus not an example of sociology under this definition.

The Birth of Sociology

It is within this very definitional and historical paradox that sociology was born. Comte's early vision of what this new social science was capable of achieving included both scientific and reformist/utopian objectives. The utopian world that would be produced by sociology was, for Comte, the final flowering of centuries of progressive intellectual development from the "theological" through the "metaphysical" to the "scientific." To usher in this utopian world, a new order of sociologist-priests would work with the knowledge produced by sociology, as blueprints for the reconstruction of not just Parisian or French or even Western European society, but of something much larger: "humanity." It was, *par excellence*, an example of Western thought of universal application.

Sociology's founding was marked from its very beginning by Auguste Comte's very choice of a term to designate this new scientific discipline. A bastard science, as John Stuart Mill called it (Rosenberg 1953), progeny of the coupling of

the Latin *socius* and the Greek *logos*, Comte's term, *sociologie*, designated its object of study, its ontology, and its corresponding epistemology. It was to be the science – logos – of the *socius*. Yet Comte, despite his pronouncements regarding what this science would be and what it would achieve, never himself produced an empirical scientific study, at least nothing that would qualify for publication as a serious work in a contemporary journal within the profession. The appearance of such an empirical text would have to wait until one of Comte's followers, Émile Durkheim (1858–1917), undertook to produce such a work. One of the first examples of a sociological study as defined by Comte was Durkheim's 1897 *Le Suicide* (with his earlier work on the division of labor a precursor).

Sociology and the Creation of the Socius/Society As an Ontological Object

By the end of the nineteenth century, the ontological object that Comte, Durkheim, and others had charted out, named and constructed through its very naming – *socius* – gained multiple significations in its modern language translations: "Community," *Gemeinschaft*, the "Social Order," more simply, "Society" or *Gesellschaft* (von Wiese 1932). The concrete individual, previously considered in post-Christian thought as a unique biological or spiritual creature, a human being, with a name and biographical life trajectory (and with a unique soul), was reconfigured within this new ontological space as an abstraction, as a product of ideal or material social forces and collective structures larger and more substantial than, and, importantly, more causally determinative than, the empty vessel that was the concrete individual (Comte 1822). Given this newly configured ontological object, the objective of this new science of sociology was to follow the natural scientific methods of observation, experimentation, and comparison to establish universal laws of social phenomena (Comte added the historical method to sociology's conceptual toolkit, signaling an expansion beyond the methods of the natural

sciences). This newly minted method was to accomplish its work of fixing the ontological space of the socius by stripping out what was previously seen as the uniqueness of the individual and his or her private psychological experience, and in its place, creating abstract, scientific objects/types of social phenomena that would then be subject to scientific manipulation and reduction to laws isomorphic with those found in the natural sciences. This newly created ontological object – socius – was as “real” as minerals and physical forces in the natural world and thus should be so studied. As Comte’s follower Durkheim put it, “social facts” should be considered as “things.” The socius was conceptualized as a “*sui generis*,” emergent reality and thus irreducible to any other scientific object in the natural or organic world.

Yet what this new “science” might designate became, and remains, problematic, not least because the very meaning of the term “science” itself was from the very beginning contested. The Comtean conception of sociology and society was almost immediately subjected to critique and revision. What Max Weber (1864–1920) and German sociologists of his generation understood under the term *Wissenschaft* is not what English or French speakers typically understand under the term “science.” Weber argued that a proper study of human action had necessarily to include the subjective meanings that individuals attached to their and other’s behaviors (Schütz 1967), a construction that Comte and other positivists would dismiss as the product of superstitious thinking, more characteristic of the receding metaphysical phase of thought. In that direction, a positive science of the socius would be not just implausible, but impossible.

This initial divide between early sociological thinkers as to what the “Individual” and “Society” meant ontologically and how the socius was to be approached epistemologically has changed over time, but it remains at the center of the discipline of sociology. In this sense, the ontological object of sociology – the socius – and thus sociology itself, has never been fixed in any consensual way and thus remains contested.

This divide has wide-ranging implications for what one might consider to be possible for individuals and/or societies. Presuppositions related to how one conceptualizes social causality as due to (in relative terms), on the one hand, social structural influences and top-down social processes, or, on the other hand, as due to bottom-up, autonomous human subject/individual level phenomena create different conceptions of, and strategies for, actions regarding the possible and the impossible. Notwithstanding this divide, the study of the ontological space known as the socius involves understanding social processes that both unite and divide human beings, unities and divisions that render some projects in life (in the Sartrean sense) possible and render others impossible. The debates generated by the unities/divisions and possible/impossible dialectic have historically been collected under the so-called “Problem of Order” debate – arguably the central problematic of the entire discipline of sociology.

Perusing of this enormous textual output of sociology brings us back to Comte. Across the landscape of contemporary sociology, the goal remains the empirical description of the socius. It is not empirical description *simpliciter* but a particular type of empirical description. It is an epistemology that focuses on and isolates the socius. This is apparent not only in empirical studies, but also in what is called “sociological theory,” the purpose of which is assumed to be either to direct the focus of empirical sociological inquiry, or to be something that empirical studies should contribute to, or to be the subfield wherein the significance of empirical studies is evaluated and synthesized under some larger, umbrella perspective.

Sociology and the Possible

Already within Comte existed the assumption that sociological knowledge is useful, that it can help create or make possible things or conditions that did not exist before, and that it can be used to better our world. Even among those sociologists who eschew politics and argue that the point is to

analyze and describe the socius and no more, something approaching a “pure science,” a term more common in the natural than the social sciences, the question remains: Why would one want to simply represent? What would be the purpose of that? What technical use would pure sociological knowledge, if there were such a thing, permit?

There are two sets of possibilities that sociology might make possible. The first concerns the socius, the transformation of the empirical socius, to make it less unjust, less unequal, less oppressive, and less violent, to transform “the world.”

The second concerns the individual, the transformative potential of sociological knowledge, the possibility that encountering, possessing, and being inscribed by sociological knowledge is transformative, that it can make one a different – presumably better – person.

Possibilities for Another World

When considering sociology as a transformative agent in history, few thinkers have matched the industry or imagination of the discipline’s founder. In three major studies (11 volumes in toto) released to the world between 1822–1857, Comte reviewed in great detail his methodology and substantive vision for sociology as well as its unique positioning as the spiritual authority for the coming utopian world. Comte claimed that after centuries of “theocracy,” the age of “Sociocracy” had arrived, thanks to sociology’s arrival on the historical stage. In Comte’s first major work, his 1822 *Plan for the Scientific Operations Necessary for Reorganizing Society*, he sets out his mission statement for the new discipline of sociology. In that work, Comte made clear exactly what sociology deemed possible and what it rendered impossible. For Comte, sociology revealed that the brief episode in western thought that celebrated the unique individual was quickly receding into the past. His 1822 blueprint for the coming utopia predicated an organic organization of humanity (what else could the *organization* of the socius actually be?) with freedom of thought and popular sovereignty swept away by the inevitable march of the positive science of sociology and the elevation of

the sociologist to the position of spiritual guide to humanity. As Comte put it: “In astronomy, physics, chemistry and physiology there is no such thing as liberty of conscience [thought]; that is to say everyone would deem it absurd not to place confidence in the principles established for these sciences by competent thinkers” (Comte 1822). In this new conception of the socius, the individual realizes a freedom unknown to the *philosopher* and others still stuck in the metaphysical phase of thought. In Comte’s borrowing of Hegel’s paradoxical notion, Comte claimed that “Freedom is the recognition of necessity.” In such a world, the possibilities for individual creative thought and collective action recede in proportion to the expansion of the socius’ capacity to organize collective forms of life. In this top-down, elitist conception of the organization of society, fanciful notions of an egalitarian society are swept aside and in its place the elevation of Authority, presumably legitimated and accepted by all, and recognized as the inevitable consequence of the organic conception of society as revealed by the new science of sociology.

The ‘sovereignty of the people’ tends to dismember the body politic by placing power in the least capable hands. . . and the ‘right of private judgment’ tends to the complete isolation of thinkers by investing the least enlightened men with an absolute right of control over the system of ideas conceived by superior intellects for the guidance of society. (Comte 1822)

As seen in Comte’s work, the mission statement for sociology goes far beyond a mere academic rendering of the details of an already existing, fully specified world. Rather, the very ontology of the world is to be, should be, transformed. Here, the classic statement regarding the possibility of social thought to change the world is Marx’s Eleventh Thesis on Feuerbach: “The philosophers have only interpreted the world; the point, however, is to change it.”

In this vein, sociology’s answer to the question “Is another world possible?” is unequivocal. It is, and, further, sociology can aid us in reflecting on what those imagined other worlds might be, and how we might actively intervene in

the functioning of the *socius* to achieve a better world. While understanding inequalities and injustices that interpenetrate social class, race, gender, and sexual politics are not the only concerns of the discipline; they have come to constitute the bulk of contemporary empirical research and theorizing. Understanding how these inequalities are reproduced, it is hoped, opens possibilities to create an alternative world. How these concerns intersect with the individual and their relationship to necessity and/or agency or possibility is the focus of C. Wright Mills' (1916–1962) contribution to the understanding of the *socius*.

Sociology As Personal Transformation, As Bildung, and As Social Therapy

The classic statement on sociology's possibilities is Mills' *The Sociological Imagination*. What Mills called "the sociological imagination" allows us, he argued, to temporally locate ourselves within the arc of world history and to locate ourselves within the topography of the society we inhabit. It is in the first chapter of *The Sociological Imagination*, "The Promise," where Mills summarizes the benefits a sociological imagination might provide to those who have come into possession of such an imagination. The promise of sociology is that it will help us transcend our small, parochial, local worlds and their attendant limited private experiences and allow us to understand those worlds and ourselves in the context of events of world historical importance. We will be transformed into cosmopolitans; we will come to understand that our very selves are "points of the intersections of biography and history within society" (Mills 1959).

While Mills' own summary of his book stressed the relationship between history and biography, this was supplemented with the frequently cited observation that: "Perhaps the most fruitful distinction with which the sociological imagination works is between 'the personal troubles of milieu' and 'the public issues of social structure'" (Mills 1959). The sociological imagination will help us, Mills believed, to see that

what we took to be our private troubles – unemployment or divorce, for example – are neither simply nor entirely personal problems but are related to, or are instances of, larger public issues.

It is an imagination, Mills suggested, that can lead to our fighting to change the world by understanding and confronting the ubiquitous inequalities and injustices that surround us. It can also result in our own personal transformation. Mills suggests that with the realization that we all are, in many ways, outsiders in our own societies, strangers to each other, and even to ourselves, we can come to understand the social relativity of all social life and hence recognize the opportunity we all have to become someone other than whom we have come to know as our own self. With such an awareness can come a shock of recognition: People "feel as if suddenly awakened in a house with which they had only supposed themselves to be familiar. . . . Their capacity for astonishment is made lively again. They acquire a new way of thinking, they experience a transvaluation of values: in a word, by their reflection and by their sensibility, they realize the cultural meaning of the social science" (Mills 1959).

While disorienting, Mills argues that such an awareness can lead to a transformation of one's self-consciousness and a reassessment of one's life; in short, it can lead to personal transformation. The past and the future become alive with possibilities. As Mills put it, "we do not know the limits of man's capacities for supreme effort or willing degradation, for agony or glee, for pleasurable brutality or the sweetness of reason." This is hardly a world that the self-confident founder of sociology could possibly have imagined.

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Possible in Sports

Ludvig Johan Torp Rasmussen
Department of Health Science and Technology,
Aalborg University, Aalborg, Denmark

Abstract

This entry provides a selective overview of sport studies that involve notions of the possible and demonstrates its developmental, experiential, and performative potentials. First, the entry outlines different perspectives on sport performance in competitive interaction sports that exhibits the importance of engaging with the possible during the game. It continues with a brief review of existential perspectives that see athletes as possible selves. Last but not least, it highlights sport coaching frameworks that may be used to help athletes engage with the possible. The entry is finalized with a call for more empirical research on the possible in sport.

Keywords

Sport · Athlete · Creativity · Possible · Exploration

The spirit of sport is forcefully embraced by the Olympic motto of “citius, fortius, altius” (i.e., faster, higher, stronger) which refers to the ethical, honest, and committed perfection of personal talents in order to excel in performance, to courageously and respectfully compete in solitude or teamwork, and to have fun and participate in sporting activities with friends. Critically discussing the humanistic potential of the Olympics from an existential perspective, Konstantinov (2017) conceptualized Olympism as a “creating creation” (i.e., similar to the arts), an artifact created by humans to create something in humans. In this regard, the Olympics was portrayed as a creative drive, as a site for human self-realization, self-perfection, self-overcoming, and overstepping the boundaries of oneself. Hence, sport is tightly connected to the possible, with athletes striving to stretch their potential to its limits. As Anderson, (2001) conveniently pointed out, the sporting world “is full of exemplary cases in which a sport or practice is openly transformed by an athlete who takes up the sense of possibility and goes to work on realizing novel ways of participating or performing” (p. 144).

Paradoxically, however, with political and cultural pressure to win medals, sport is often more associated with strenuous training and repetition to perfection than with playful exploration of new positions, perspectives, and possibilities. In terms of sociocultural influences, acculturation processes of sports are “driven by explicit and socially-imposed convergence to a common optimal performance model (e.g. a putative “champion” model or a classical technique),” which constrain the exploratory behaviour of the athlete and thus “play a conservative role” regarding their novelty- and idiosyncratic tendencies, aligning them in a “collective direction” (Hristovski et al. 2011, p. 181). As argued by Bar-Eli et al. (2006), many contexts of sport suffer from instrumental rationality due to the principle of “maximization through optimization” which emphasize effectiveness and assumes that a universally optimal solution exists for a particular problem (e.g., in a specific game situation). In this regard, several studies (for overview, see Cushion

2013) have shown that sport coaches tend to reject innovative sport-pedagogical approaches. Some prefer to stick with the safe and tested means, and others superficially adopt the ideas that confirm their beliefs and verify their expertise. Consequently, the players do not get to experience new approaches. In turn, these overly socialized players may both prefer and expect traditional coaching and therefore resist alternative approaches. As argued by Occhino et al. (2014), a coach's ideology may "shape an athlete's view of their sport participation – psychologically, emotionally, and physically" (p. 404). Hence, it determines their learning preferences and the eventual outcomes of their sport participation.

From these initial considerations, there seems to be poor conditions to engage with the possible in sport, but doing so could have both developmental, experiential, and performative implications. Herein, the aim of this entry is to provide an overview of sport studies that can contribute with relevant perspectives for the study of the possible, particularly drawing on the field of sporting creativity. This account is necessarily selective given the boundaries of this encyclopedia and especially the richness of research interests readily associated with the topic of the possible (Glăveanu 2018). The entry starts by outlining different theoretical perspectives on sport performance that exhibits the importance of engaging with the possible in the heat of the game. It continues with a brief review of existential perspectives that see athletes as possible selves. Last but not least, the entry highlights a few sport coaching frameworks that involve notions of the possible. The entry is concluded with a call for more empirical research on the possible in sport.

Sport as a Sphere for the Possible

This entry focuses on competitive interaction sports (e.g., ice hockey, soccer, and basketball), where creativity (and thus engaging with the possible) is vital to successful performance (Rasmussen 2019). These dynamic sport

disciplines have a strong prevalence for creativity (rather than imitation) due to frequent occurrences of unique, open-ended, and unexpected situations, which require anticipation, adaptation, flexible decisions, and new solutions, and since the rival can be surprised by a variety of original solutions and strategic methods (Ovens and Smith 2006). Further, the possible is inherent to the dynamic systems theoretical approach to creativity in sport. From this perspective, sports are seen as disordered, complex systems characterized by multistability, which refer to the coexistence of multiple possible solutions in every situation (Hristovski et al. 2012). At any moment, each player has access to different degrees of freedom (i.e., sets of functionally appropriate possibilities), which are continually changed by the co-adaptive dynamic actions of teammates and opponents. Matches in these complex games are highly unstable and varied processes, where the players on the two teams aim to create poor conditions for their opponents and favorable ones for their teammates. While stereotypical playing styles gradually loses their efficiency (Aggerholm et al. 2011), this can be achieved by being sufficiently unpredictable for opponents and predictable for teammates. Such an uncertain environment requires the players to continually adapt to changing situations and to be open to and utilize unexpected and novel possibilities.

For Aggerholm et al. (2011), the essence of soccer (i.e., Association football) is that the players constantly have to engage in, relate to, and adapt to open, indeterminate, unfolding social situations. The game is characterized by a high degree of contingency, due to its "dynamic social configuration with a tension-balance relation" (Aggerholm et al. 2011, p. 347) between the two opposing teams, who simultaneously try to unbalance and resist each other. This counterproductive relationship (i.e., opposition with continuous responses and counter-responses) shape the possible courses of action for the player and highlights the improvisational element of invasion games (Tanggaard et al. 2016). Drawing on Bachelard and Merleau-Ponty, Edgar (2015) characterized soccer as a "contest over space" (p. 164)

and portrayed soccer players as “poets of space,” who creatively imagine how different places on the pitch can be created and inhabited in order to enable their own capacities to flourish and their opponents’ to diminish. In this regard, Aggerholm et al. (2011) suggested “pretention” as a concept for the “deceptive rush into the future” (p. 355) which is required to perform creatively in soccer (i.e., do a feint); in pretence, the opponents’ intentions and meaning horizons are modelled (e.g., through seduction; building up their expectations) and the acting player’s future possibilities are created. This requires distinctive kinds of bodily and intersubjective awareness. To always be two steps ahead and to plan luring, deceptive acts, the player must be absorbed in their opponent(s) – they need “awareness of the relational situation” (p. 350) and openness to the unfolding possibilities in order to “take the right initiative at the right time” (p. 352) and win the duel.

Drawing on Thoreau’s transcendentalist concerns about living an *over-civilized* or mechanical life on the one hand, or an *under-civilized* or savage existence on the other, Anderson (2001) argued that sport offer a lived “sense of sheer possibility” (p. 143), which counteracts the sedating powers of everyday life, awakens people to their human agency, their potential for transformation, and their possibility of living an “intrinsically meaningful life” (p. 141). Anderson (2001) exemplifies how this feeling of energetic lightness comes in anticipation of a basketball game when stepping onto the court:

The court seem to respond to the players’ anticipation and become a site of freedom. They burst on the court almost as if they were dancers [...] the felt possibility wrenches us from the domineering social world of the everyday. If only for a few minutes, we are, as Thoreau puts it, ‘returned to our senses’ [...] We know – because the game or the practice lets us feel it – that we have a capacity for more, even if we’re not precisely sure what that ‘more’ is. (p. 143)

Hence, Anderson (2001) argued that most people live as if they are blind to their creative possibilities, but creative experiences in sport can them recover this vital aspect of their humanity. Sport enable its participants to face the world in novel

ways and provide them with “the room to create” (p. 144), to discover new ways to perform or participate. From this perspective, sport is a “site of risk in context, of spontaneity within constraints” (p. 142) that enable people to live as a *frontier*, that is, a dynamic, free, and undogmatic existence on the border between an over- and under-civilized life.

Equivalent ends can be drawn from Conill Sancho’s (2016) and Inglis’ (2004) elucidations of Gasset’s *ratiovitalism*, where life is basically understood as a “creative experiment” (Conill Sancho 2016, p. 418). In order to live, humans do not adapt to the medium but actively adapts it. According to Inglis (2004), this creative power is particularly inherent in sports, and therefore, it is “in the pursuit of sportive activities, not instrumentally guided labor, that man truly finds contentment” (p. 86). From this view, sports are not limited by utilitarian perspectives, but opens a “superior form of human existence [...] a festival and creative meaning of life” (Conill Sancho 2016, p. 416). Accordingly, drawing on the latter perspective, it could be argued that if sports do not allow its participants to adapt the medium (that is, to be creative), then they will cease to exist.

Athletes as Possible Selves

In his editorial on *The Possible as a Field of Inquiry*, Glăveanu (2018) explored different perspectives on “the possible self” and argued that human beings “exist, at all times, between the ‘here and now’ of their concrete life situation and the then and there of creativity, wonder, and imagination” (p. 522). The idea to treat athletes as possible selves is not new in the sport literature. For example, Heidegger’s notion of the “Dasein,” that describes the human being’s way of existence as being open to their own being, to others and the world, and to future possibilities (in order to live authentically, rather than falling to and accepting the traditional views and ways of “das man”), has been widely applied and discussed in the philosophy of sport (Lopez

Frias and Gimeno Monfort 2016; Martinková and Parry 2016). In a recent paper, extending Heidegger's idea of how Dasein either deal with the environment in a practical ("Zuhandenheit") or theoretical ("Vorhandenheit") mode, Breivik (2020) discussed the ontology of the sporting human being, focusing on how it – as "homo movens" and "homo ludens" – playfully explore and experiment with its environing world and itself. Through explorative play, the sporting being builds internal models of the interactional possibilities of its bodily being-in-the world in a particular sporting context (individual, encounter, team, or nature sport). According to Breivik, these types of sport involve the fundamental question of play (i.e., "What can I do (with and through my body)?"), but also pursuits of goal-directed questions of perfection (i.e., "What can I do at my best?"). Yet, this self-testing element (which can lead to innovations) is different in encounter sports and especially in team sports since there is a contest, that is, an I-You or We-They relation. Being part of a team and taking a certain role with particular tasks and obligations, to some extent limits the freedom of the sporting human being since efficient collaboration is needed to win (Breivik 2020).

Using Nancy's ontological notion of "being-with" (i.e., a foregrounding of Heidegger's notion of "Mitsein," i.e., that meaning-making is basically relational since we are thrown into the world with other beings), Hardes and Hogeveen (2016) highlighted that sport performances are conditioned and constructed by the particularities of the athlete's lives, constituted through their various relations with others, and with the objects and technologies others have given agency to. From this perspective, athletes are not understood as fixed, solitary, and self-enclosed subjects who strive for experiences that fulfil repeatable and unchanging criteria of flow (i.e., traditional accounts of flow), but as open and unique singularities that are in constant flux and always forge new relations with others and the world: "singular experience is always an iteration that is an opening towards the other and new ways of being in the world" (p. 287). Based

on Csikszentmihalyi's idea that flow states constitute spaces to expand and transcend the self, and lead to a feeling of having pushed forward boundaries of our being, flow is understood as an opening out of the athlete's self – "it is about excesses, ways of being anew, becoming other, and doing so creatively" (p. 287). As Hardes and Hogeveen (2016) highlight, sport participation "give us the opportunity not only to experience our bodies in new ways definable to the practice, but also to exceed these bodily experiences in new and different ways" (p. 287). From this perspective, it is unethical and potentially harmful when coaches push athletes to states of skillful coping that cuts off the opportunity for seeking out new possibilities and creative experience. Such strivings may not only entail dogmatic coaching practices and discouraged athletes, but also have a negative and limiting impact on how the athletes think they ought to experience their sport (Hardes and Hogeveen 2016). Athletes should be freed from mechanical procedures and desires for external perfection, and instead be given opportunities to explore novel possibilities, in order to transcend themselves and experience their body in new ways definable to the sporting context.

An ethics of flow would not be found in the seeking out of repetitive mechanistic experiences that turn us into clones of ourselves or cyborgs; the playfulness of a flow-like experience comes from noting the immanence of life and the relatedness of the self to the world and to others. (Hardes and Hogeveen 2016, p. 287)

While the abovementioned contributions focus on describing athletes' natural openness to the possible, other scholars have that specified particular existential attitudes may be beneficial to engage with the possible (and thereby enhance performance) in sport. For example, Campos (2014) described spontaneity as a "freshness in our way of approaching the activity" (p. 58) which revitalizes the game by changing and renewing the courses it may take, preventing it from being habitual and ordinary. Drawing on the work of Peirce, he also defined it an instinctive capacity for unforeseen

and unscripted actions, and a lively, fresh, and playful attitude manifested as “exploration of the unexplored” (p. 58). Along similar lines, Hopsicker (2011) argued that an important benchmark for becoming a sporting genius (i.e., innovative performers who test current conventions and form new standard models) is to adopt a risk-taking attitude, which regards a “comfortable attitude of not knowing what will come next” (p. 21). Further, Aggerholm and Ronglan (2012) performed an existential analysis of humor as a habitual relation to the world which includes considerations of the humorist athlete’s capability and desire to “point to the possible” (p. 340). Among more, they argue that humor can help athletes spot and challenge unsustainable conventions, norms, and contradictions, enable a playful approach to the game, and be a vehicle for motivation, learning, and creativity.

Through a *playful distancing* the humorist transcends the borders of the self and the actual world, which allows the player to risk losing himself in the activity and thereby gaining new possibilities of performance. It challenges the real and opens new possibilities. [...] The humorous player has a drive for curious experimenting with the given and the ability to see situations as possibilities and not just the facts. (pp. 339–340)

This playful attitude of humor illuminates how humoristic athletes turn towards the possible by looking at the ongoing game situation from an intentional distance. Specifically, this part of their analysis elaborated Kretchmar’s (1982) notion of abstract thinking as “distancing” oneself from the surrounding environment (i.e., the object of consciousness), which enables the athlete to make new connections between seemingly unrelated phenomena in the game. Seeing possibilities, the humorist has a potential to make a qualitative difference in the game (Aggerholm and Ronglan 2012).

Nurturing the Possible in Sports

While several scholars recognize the need to engage with the possible in the performance

contexts of competitive interaction sports as well as the importance of treating athletes as possible selves (both on and off the pitch), there is a scarcity of studies that genuinely embrace these aspects by offering practical resources (e.g., coaching principles) to help athletes engage with the possible. Nevertheless, two sport pedagogical frameworks are worth highlighting.

First, a cornerstone of *nonlinear pedagogy* is that manipulation of task constraints (e.g., rules, instructions, cues, and the game configuration) and environmental constraints (e.g., sociocultural and physical influences) is a key to facilitate explorative (and creative) behavior where the athlete search for novel performer-environment configurations (Chow et al. 2011). Nonlinear interactions between these types of constraints and the player’s unique psychological, morphological, and physiological makeup (i.e., personal constraints) shape the player’s landscape of affordances, a “hypothetical workspace” which contain all the action possibilities in the given situation (p. 191). Hence, the continuous manipulation of constraints enhances the chance of qualitative reorganizations (i.e., components coupled in novel ways) and action insight (i.e., discovery of atypical, functional opportunities) in the movement system. This can be facilitated by coaches by relaxing constraints, so more solutions are possible, habitual actions are suppressed (Hristovski et al. 2012), or by dampening or amplifying sociocultural constraints that are usually overemphasized or deprioritized in the particular context (Vaughan et al. 2019). As Vaughan et al. (2019) propose, teams limited by intrateam competition may benefit from activities designed to dampen this influence (e.g., a task requiring collaboration and teamwork), and generally, to help their players discover new action possibilities, coaches could design tasks focusing on certain abilities flourishing in other sociocultural movement practices (e.g., samba, capoeira and other sport cultures). Finally, the exploratory behavior can also be controlled by players able to suppress habitual actions and purposefully engage in creative self-

reorganization of task and environmental constraints (e.g., altering interpersonal distance), to open and explore space-time windows for novel actions (Hristovski et al. 2012). Among others, the ability to do so depend on the openness of both the athlete and of the practice forms and playing style in their environment (Vaughan et al. 2019).

Second, the *situated model of creative actions in sport* locates the openminded and playful exploration of novel and unusual action possibilities at the heart of the creative process (Rasmussen et al. 2019). This work captures the tension between the possible, the actual, the self, and the other. Based on Dewey's educational philosophy, it also illustrates how engaging with the possible may enhance the players' growth (e.g., in terms of developing their initiative in applying their capacities to novel aims) and expand and enrich the players' experience of their sport. Extending this perspective, Rasmussen et al. (2019) outlined four components that affect the athlete's horizon of action in any given situation, that is, the range of action possibilities that are open to be explored: *normativity, materiality, intentionality, and capability*. These components are defined below and exemplified with a study demonstrating its role in terms of affecting the players' capacity to engage with the possible.

Normativity refers to cultural norms, values, procedures, coaching standards, and social expectations that determine the approved action space, or the range of appropriate actions, and lead to certain kinds of actions being encouraged and rewarded at the expense of others. For example, application of *The Creative Soccer Platform* (i.e., the didactic principles of task focus, parallel thinking, horizontal thinking, and no experienced judgment) may (momentarily) establish an autonomy supportive, judgment free, and playful training environment where the players are more confident in originating and attempting new and abnormal actions (Rasmussen and Østergaard 2016).

Materiality regards physical (e.g., objects; field shape and surface) and conceptual (e.g., symbols, principles, agreements, and templates) action

resources. For example, Tanggaard et al. (2016) argued how changes in handball material from natural to synthetic leather and the introduction of resin afforded the advance of wing players' remarkable ways of shooting. In turn, these trick shots contributed to innovation in handball. Since the material changes allowed the attackers to release the ball in new ways, it also enabled them to interact with their teammates in new ways. These new possibilities for the attackers also changed the conditions for the defenders who had to come up with countermeasures and new ways to cooperate in their defensive zones (Tanggaard et al. 2016).

Intentionality is an action orientation towards specific aspects of the environment (e.g., have fun with friends, imitate famous players, avoid mistakes, or satisfy others). For example, in a social priming experiment, Furley and Memmert (2018) showed that amateur soccer players performed better on a soccer-specific divergent thinking task after being exposed to the names and images of creative soccer experts (e.g., Lionel Messi) and writing down their characteristics.

Capability regards the players' action capacity which is not only comprised by their bodily abilities (e.g., physical skills, technical skills) but also their emotional attitude towards – and their subjective experience of – their own body, which determine what they believe they can do with it (or through it) in the given situation. For example, Moraru et al. (2016) argued that the players' motor ability to perform the imagined actions may limit their originality in divergent doing tasks. In terms of exploring the possible, this is especially a problem if there are high demands for appropriateness (Rasmussen 2019).

The situated interaction between the four abovementioned components define the player's usual actions, or their habitual action repertoire, in a given situation. From this perspective, creativity regards transcending the usual. In order to help players do so, coaches may inter alia relax normative expectations (e.g., momentarily preferring quantity over quality), form novel material conditions (e.g., play with

another kind of ball), and encourage the players to engage with unfamiliar intentions (e.g., play to explore, rather than to win at all costs). Such initiatives could be implemented in connection to designing particular tasks where the players cannot rely on habitual action repertoires but need to change their perspective and explore unusual action possibilities in order to play the game (Rasmussen et al. 2019).

Conclusion

This entry explored sports as a domain for the possible and highlighted a selective range of sport studies that include relevant perspectives regarding the possible. First, competitive interaction sports were considered as spheres for engaging with the possible. Both a developmental and performative perspective, there is little sense in maintaining the actual in the complex and open-ended performance contexts formed in these disciplines. Second, athletes were portrayed as possible selves, as humans who are fundamentally open to other ways of being in the world and both have a need for and capacity to interfere with and shape their environment. As shown during this entry, engaging with the possible in sport may have a variety of developmental, experiential and performative implications. In this regard, the entry listed particular existential attitudes that helps the athlete engage with and explore the possible. Unfortunately, this may be a rare phenomenon in competitive interaction sport – especially in high-performance contexts – which are concurrently portrayed by disciplinary and conforming approaches, instrumental use of the athletes' bodies, and suppression of spontaneity in defense to territorial interests of the team (Cushion and Jones 2014; Manley et al. 2012). In these contexts, fruitful creative inquiries are often stalled by disempowering and repressive practices, where coaches are perceived as being solely responsible for their athletes' development and believe that optimal performance models exist. Hence, there is a large potential in helping coaches understand the value of engaging with the possible. Recently, an attempt to do so through action research was done

with varying success (Rasmussen et al. 2020). Third, the entry outlined two sport pedagogical approaches that may serve as alternatives to traditional approaches since they offer practical resources that may help coaches design tasks where their athletes need to explore novel and unusual action possibilities. Finally, as evident in the entry, most sport studies that involve relevant notions of the possible are of a theoretical and philosophical kind, and do not involve the perspectives of the actors involved on the pitch. Thus, this entry stresses importance of conducting more qualitative and contextualized research on the possible in competitive interaction sport.

Cross-References

- [Affordance](#)
- [Creativity](#)
- [Genius](#)
- [Humor](#)
- [Norms](#)
- [Openness to Experience](#)

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The Possible in the Life and Work of Alfred North Whitehead

Giovanni Emanuele Corazza
DEI-Marconi Institute for Creativity, University
of Bologna, Bologna, Italy
LAPEA, Université de Paris,
Boulogne-Billancourt, France
LAPEA, IFSTTAR, Univ. Gustave Eiffel,
Versailles, France

Abstract

Alfred North Whitehead (1861–1947) was a prominent multidisciplinary figure, whose intellectual interests extended over mathematics, philosophy of science, history of science, education, religion, and metaphysics. The common thread to be found in Whitehead's work across diversified disciplines is his quest for universal connectedness, which can be found in all his theoretical frameworks. In mathematics, Whitehead pursued a generalized theoretical framework based on symbolic logic, along with Bertrand Russell. In the philosophy of science, Whitehead stated that for a natural phenomenon to exist, space and time must enable interconnection, without falling into the trap of ideal point-like abstractions, and hence of scientific materialism. In the philosophy of education, Whitehead proposed the development of interwoven literary, scientific, and technical curricula, all pointing to the single ultimate subject: life. In religion, Whitehead saw God as both primordial and consequent, giving original input to the process of organic evolution of the universe and then judging its development with benevolence. In metaphysics, Whitehead elected creativity as the ultimate principle, which brings together the multitude of the many into the uniqueness of the ever-transforming one. Importance and expression are, respectively, defined by Whitehead in view of their immanence of the infinitude into the finite and of the finitude into

the infinite. Process philosophy is arguably Whitehead's main contribution, positing a cosmological view on the universe dominated by creativity, potentiality, possibility, connectiveness, and teleological value. Whitehead's legacy is finally briefly discussed with reference to theology, eastern philosophy, quantum physics, sociology, and creativity studies.

Keywords

Cosmology · Creativity · Mathematics ·
Metaphysics · Philosophy of education ·
Philosophy of organism · Philosophy of
science · Process philosophy · Process
theology · Religion

Introductory Notes About Whitehead

Alfred North Whitehead (1861–1947) is considered to be a prominent multidisciplinary figure in the scientific and philosophical panorama of the twentieth century, with intellectual interests extending over mathematics, philosophy of science, history of science, education, religion, and metaphysics. The evolution of his fields of interest in the course of his lifetime can also be linked to his academic trajectory that can be roughly divided into three periods, respectively, associated to his assignments in Cambridge (UK), London (UK), and finally Cambridge (Massachusetts, USA). Whitehead was born in Ramsgate (UK) on February 15, 1861; after receiving his degree at Trinity College in Cambridge, he became a professor there from 1884 to 1910, where mathematics was his primary field of work, with a strong emphasis on symbolic logic. In 1910 he moved to London to join the Imperial College, where his concerns for philosophy and history of science gained momentum, always in parallel to a continued interest in mathematics and mathematical physics, spurred by the contemporary rise of relativity theory and quantum physics. In 1918 Whitehead was elected dean of the Faculty of Science at the University of London, and this position gave him the chance to develop his well-defined philosophy of education. In 1924,

when he would have been forced to retire by British law, he took a position as professor of philosophy at Harvard (Cambridge, Massachusetts). The peculiarity of his academic evolution appears clearly in his own words (Whitehead and Price 1954/2001, p. 146):

All my life [...] I had been a lecturer in mathematics. At the age of sixty-three in 1924, I came to Harvard to lecture on philosophy for the first time.

This final period of his life was ripe with results in metaphysics and religion: the philosophical framework constituting Whitehead's main contribution, identified as *process philosophy*, emerged here in all its breadth. This is where the concept of the possible, potential, and possibility acquires definitive substance. Alfred North Whitehead died in Cambridge (Massachusetts) on December 30, 1947.

Whitehead's Multidisciplinary Contributions

Whitehead was a prolific writer who produced nearly 30 books, notwithstanding the fact that his approach to the transformation of ideas into written text was quite unique (Whitehead and Price 1954/2001, p. 146): "I do not think in words. I begin with concepts, then try to put them into words, which is often very difficult." If a common thread were to be found in Whitehead's work across diversified disciplines, this would have to be the quest for universal connectedness, which can be found in all his theoretical frameworks. In the following, Whitehead's main contributions to the fields of mathematics, philosophy of science, philosophy of education, religion, and metaphysics are synthetically described, in this order. More extended information is provided, in particular, by Desmet and Irvine (2018).

In mathematics, first in his *A Treatise on Universal Algebra with Applications* (Whitehead 1898), and later, collaborating with his former disciple Bertrand Russell, in the famous trilogy entitled *Principia Mathematica* (Whitehead and Russell 1910, 1912, 1913), Whitehead pursues a systematization of the entire field of mathematics

through the use of symbolic logic as a universal approach. It is to be noted that, although the two authors collaborated closely in the development of this monumental endeavor (yet unfinished, as a fourth volume would have been foreseen), their vision on the ultimate significance of logic diverged. While Whitehead saw mathematical logic merely as an instrument to guide intuition and generalization into patterns, Russell held an objective to show the supremacy of logic over other forms of mathematical thought. In this view, Whitehead was closer to his contemporary Henri Poincaré (Corazza and Lubart 2019) than to Russell. Later on, the layout of Whitehead's process philosophy, based on the foundation of a world composed of interweaved processes and events and in which isolated objects cannot exist, resulted to be in complete opposition to the doctrine of logical atomism theorized by Russell.

Considering Whitehead's contributions to the philosophy of science, one of his first works entitled *An Enquiry Concerning the Principles of Natural Knowledge* (Whitehead 1919/1982) already contains the initial elements of what he would develop as a harsh critique of Newton's notion of dimensionless points and time instants, a notion upon which classical physics is fundamentally based. In Whitehead's mind, in order for a natural phenomenon to exist, space and time must enable interconnection, without falling into the trap of affording a status of reality to ideal point-like abstractions. In other words, instead of considering space and time as dimensions that afford a disconnected description of reality, the emphasis should be placed on the ways in which all essences are ultimately connected. Possibilities stem out of interconnections. It should be underlined that Whitehead derived these positions not from abstract thought but by observation, adhering to his intuitive grasp of nature. In this sense, his approach to the philosophy of science could be classified as evolutionary naturalist. Interestingly, Whitehead recognized in Leonardo da Vinci a forerunner in the observation of nature as a means to scientific understanding (Northrop and Gross 1953, p. 401):

Perhaps the man who most completely anticipated both Bacon and the whole modern point of view was the artist Leonardo da Vinci, who lived almost exactly a century before Bacon. Leonardo also illustrated the theory which I was advancing in my last lecture, that the rise of naturalistic art was an important ingredient in the formation of our scientific mentality. Indeed, Leonardo was more completely a man of science than was Bacon. . .

Several years later, in *Nature and Life* (Whitehead 1934/2011), Whitehead would confirm this point of view but also extend his critique to the pure sense-based empiricism of Hume, which to Whitehead is also not capable to accommodate and explain the visualization capabilities of the human mind. While Whitehead recognizes that both Newton and Hume proposed valid descriptions within the limits of their assumptions, both omitted the intuitive mode of understanding. On the other hand, the nineteenth century had also seen the rise of the theory of electromagnetism, based on the fundamental results provided by the solutions to Maxwell's equations. The concept of electromagnetic fields, according to which a source of an electromagnetic phenomenon impacts the entire space without any a priori limitation, appeared to Whitehead as the perfect conceptual model to counter Newton's scientific materialism of isolated things. The universe should be thought of as a field of forces, in which every point influences every other point without pause. For Whitehead this was the way to overcome the "fallacy of single location" he attributed to Newton, that is, the idea that nature can be described as a collection of self-sufficient isolated agglomerates of matter in specified positions at specified times. In *Science and the Modern World* (Whitehead 1926a/1967, p. 91), Whitehead advances the explicit proposition that the adoption of the field-based approach entails the abandonment of "simple location [as] the primary way in which things are involved in space-time. In a certain sense, everything is everywhere at all times." It could be argued that the subsequent development of process philosophy was fundamentally inspired by the lessons Whitehead learned about electromagnetism, as exemplified in *Nature and Life* (Whitehead 1934/2011), where he discusses how the

concepts of activity and process are the fundamental building blocks, because nature is a theatre where ever-changing activities play interrelated parts in one universal process and where it is not possible to identify (if not through an approximation) self-contained activities in limited regions of space.

Even when Whitehead was burdened by administrative responsibilities in his role as Dean of the School of Science at the University of London, he never stopped producing original thought. Indeed, these were the years in which Whitehead's philosophy of education was developed, based on the idea that the only subject matter for all education is one: life itself, in all its interrelated ramifications. Therefore, in the field of education, his idea of universality takes on an epistemological declination, whereby literary, scientific, and technical subjects should be interwoven in the design of all educational curricula, as discussed in *The Aims of Education and Other Essays* (Whitehead 1929a). An education system should contain all three curricula, the literary, the scientific, and the technical, but each one should contain elements of the other two, in a sort of beneficial cross-illumination. Further, for Whitehead the mind of a student should never be seen as a box to be filled with chunks of knowledge, alien ideas, or scraps of information. Rather, it should be stimulated in its growth, in a similar way as a living organism would develop under the inputs of the surrounding environment, following a natural "rhythm of education" (Whitehead 1929a). This rhythm consists essentially of repeating cycles of three fundamental phases of a periodic process: in the first phase of "romance," a subject should be freely explored, facilitating all possible occasions for awe and wonder. Once the curiosity level has built up, the phase of "precision" must be opened, in order for the student to acquire methodologies, techniques, and detailed knowledge in a disciplined way. But this is not the end; once mastery of the discipline has been acquired to a sufficient level, then a third phase of "generalization" should be facilitated, to allow the formation of interdisciplinary associations, through the application of domain-specific concepts to domain-general questions. It is interesting

to note the similarity of this cyclic educational approach to the modern concept of agile development of software (Martin 2002). Whitehead's critique of classic educational approaches, in particular for mathematics, is that teachers typically omit phase one and never reach phase three, leaving the student with a collection of aridly disconnected notions. On the other hand, it could be argued that a Montessori approach (Montessori 2013) focuses primarily and successfully on the romance of phase one but may come short at developing precision and generalization. Whitehead's approach appears to provide the well-designed balance needed to achieve thoughts of high quality, enriched by "receptiveness of beauty and humane feeling" (Whitehead 1929a, p. 1).

Apparently, Whitehead's concern for morality and religion did not emerge explicitly in his works until his transfer into the United States, even though the fact that his father Alfred was a reverend might allow presuppositions about his implicit concern for these subjects. Indeed, his philosophy of science was completely devoid of issues of spirituality or morals. But when time was mature, Whitehead's process philosophy was conceived to include spiritual matters as a never-ending search, as portrayed in *Science and the Modern World* (Whitehead 1926a, pp. 191–192):

Religion is the vision of something which stands beyond, behind, and within, the passing flux of immediate things; something which is real, and yet waiting to be realized; something which is a remote possibility, and yet the greatest of present facts; something that gives meaning to all that passes, and yet eludes all apprehension; something whose possession is the final good, and yet is beyond all reach; something which is the ultimate ideal, and the hopeless quest.

However, Whitehead always maintained a clear distinction between the ideal vision of religion described above and its use by mankind, which can reach extremes of good and evil. While religion maintains fundamental importance in being transcendent, in *Religion in the Making* (Whitehead 1926b/1996), he clarifies that the history of religions is unfortunately rich of horrors, including human sacrifice, cannibalism, hatred, war, and bigotry. Still, religion must be

considered as a force with upward trend justifying an optimistic view of the future, despite its cycles of fading and resurrection. Perhaps the most important aspect of Whitehead's contribution to religion is his dipolar definition of God, which can be found in *Process and Reality* (Whitehead 1929b/1978): God is both primordial and consequent. The primordial God is the necessary entity that gives the original input to the process of organic evolution of the universe, without predetermining it. The actual entities and the actual occasions maintain a form of freedom, while God tenderly presents ultimate values and operates to persuade for their pursuit. Then, God is consequent in its judgment of the world, which can only take place if freedom has been granted to the universe, allowing God to tenderly save the world by offering its vision of truth, beauty, and goodness.

Arguably, Whitehead produced his works of highest impact in the field of philosophy and in particular of metaphysics, where all his contributions to mathematics, science, education, and religion find a final and coherent systematization. His philosophical production was based primarily on the transcription of cycles of lessons he held. While *Science and the Modern World* (Whitehead 1926a/1967) was based on the prestigious Lowell Lectures at Harvard, his major work *Process and Reality* (Whitehead 1929b/1978) was derived from the Gifford Lectures at the University of Edinburgh (1927–1928). These two books were conceptually completed in a sort of trilogy by *Adventures of Ideas* (Whitehead 1933/1967). Not surprisingly, Whitehead held strong positions against all forms of disconnection into dichotomies and in particular against the bifurcation between the objectivity of the world of matter of fact and the subjectivity of the world of moral, aesthetic, and religious values. Integration of all disciplines into one cosmology was perhaps his main concern. This harmonization should embrace the abstractions of both science and art, morals and religion, and poetry and mystical visions. Central to this vision of the universe is creativity, which is considered by Whitehead as the ultimate principle of metaphysics, bringing together the multitude of the many into the single

ever-changing unity. Creativity leads to potentiality and possibility, as pure potentials are “eternal objects” the realization of which in the world become the “actual objects.” The essential elements of Whitehead’s process philosophy, drawing from both *Process and Reality* (Whitehead 1929b/1978) and *Modes of Thought* (Whitehead 1938/1968), are discussed next.

Whitehead’s Process Philosophy

Process and Reality (1929b/1978) is undoubtedly Whitehead’s major work, containing all the fundamental conceptual elements of his process philosophy, a cosmological view on the universe dominated by creativity, potentiality, possibility, connectedness, and teleological value. All forms of life are interpreted as expressions of organisms, a term which is endowed with an extended applicability, encompassing also physical systems of pure matter. This conceptual framework is filled with original elements but not in isolation, as Whitehead spends meticulous effort in positioning his thought within the history of philosophy. In particular (Whitehead 1929b/1978, p. xi):

“These lectures are based upon a recurrence to that phase of philosophic thought which began with Descartes and ended with Hume. The philosophic scheme which they endeavour to explain is termed the ‘Philosophy of Organism’ [...]. In order to obtain a reasonably complete account of human experience considered in relation to the philosophical problems which naturally arise, the group of philosophers and scientists belonging to the seventeenth and eighteenth centuries has been considered, in particular Descartes, Newton, Locke, Hume, Kant.”

However, to the above list of referential figures, two Greek philosophers must be added, namely, Plato and Aristotle, to whom Whitehead evidently recognizes the fundamental ignition to all Western thought. Anecdotally, it has been said that Whitehead thought of the European philosophical tradition as a “series of footnotes to Plato.” As a matter of fact, Whitehead considers that two cosmologies have dominated European thought: Plato’s *Timaeus* and the seventeenth-century cosmology developed as a collaborative effort

between Galileo, Descartes, Newton, and Locke. Given his aim to produce his own framework, he believed “that perhaps the true solution consists in a fusion of the two previous schemes, with modifications demanded by self-consistency and the advance of knowledge” (Whitehead 1929b/1978, p. xiv).

In process philosophy there are three ultimate notions (Whitehead 1929b/1978, pp. 21–22): creativity, many, and one. The term “one” stands for the singularity of an entity. The term “many” conveys the notion of “disjunctive diversity,” and there is a multitude of beings in disjunctive diversity. “Creativity” is the universal of universals, by which the many, which are the universe disjunctively, become the one actual occasion, which is the universe conjunctively. In process philosophy, creativity is nothing less than the ultimate principle of metaphysics. Whitehead observes that it lies in the nature of things that the many enter into a complex unit, through creativity. Creativity is the principle of novelty, thanks to which an actual occasion is a novel entity diverse from any entity in the “many” which it unifies. A “creative advance” is the application of this ultimate principle of creativity to the conjunction of elements of the universe to originate novel situations, identified as “actual entities” or “actual objects.” But an actual entity is not a static object: it evolves through the “production of novel togetherness,” which is the ultimate notion embodied in the term “concrecence” (growing together). Thus an actual entity has a threefold character (Whitehead 1929b/1978, p. 87): “(i) it has the character ‘given’ by the past, the collection of its elements; (ii) it has the subjective character aimed at in its process of concrecence; (iii) it has the superjective character, which is the pragmatic value of its specific satisfaction qualifying the transcendent creativity.”

It appears then that process philosophy has many elements in common with pragmatism and with the original *panta rei* doctrine by Heraclitus. In fact, Whitehead states that: “The ancient doctrine that ‘no one crosses the same river twice’ is extended. No thinker thinks twice; and, to put the matter more generally, no subject experiences twice” (Whitehead 1929b/1978, p.

29). The application of creativity has the effect of producing vivifying novelty, in a process where the old meets the new, which is in a sense “selected” from the multiplicity of yet unexpressed potentiality (Whitehead 1929b/1978, p. 164). In Whitehead’s cosmology, creativity serves to place God and the World at extreme opposites. In each actuality two conrescent poles of realization can be identified: the “physical” and the “conceptual.” For God the conceptual is prior to the physical; for the World the physical poles are prior to the conceptual poles (Whitehead 1929b/1978, p. 384).

In process philosophy, realized temporal matter is transcended by “possibility.” The actual world, intended as a community of entities which are settled and actual, imposes conditions and limits to the potentiality for creativity beyond itself. This is a limitation to the general potentiality provided by eternal objects, which can however be overcome through novel realizations. Thus, relatively to any actual entity, there is a “given” world of settled actual entities and a “real” potentiality, which is the possibility for creativity beyond that state of the art. To Whitehead, this exemplifies the metaphysical principle that every “being” is a potential for a “becoming.”

In *Modes of Thought* (Whitehead 1938/1968), Whitehead elaborates on the intelligence of mankind basing his discussion on three fundamental notions: importance, expression, and understanding. The notion of importance is dominant in civilized thought, and it can be defined as “Interest, involving that intensity of individual feeling which leads to publicity of expression” (Whitehead 1938/1968, p. 8). Importance to Whitehead is that aspect of feeling whereby a perspective is imposed upon the universe of things. The two notions of importance and perspective are thus closely intertwined. The generic aim of the creative process is therefore the attainment of importance or a new perspective on the world. Expression is then necessary to diffuse throughout the environment something which will make a difference, due to its importance (Whitehead 1938/1968, p. 20). While importance is derived from the immanence of the

infinite into the finite, expression represents the immanence of the finite into the multitude on fellows beyond oneself. Taken together, importance and expression are witnesses to both the monistic aspect of the universe (through its overarching importance) and its pluralistic character (through the multitude of expressions). In Whitehead’s words (Whitehead 1938/1968, p. 20): “Importance passes to the world as one to the world as many; whereas, expression is the gift from the world as many to the world as one.”

Expression becomes the very reason of individual differences. While the laws of nature represent large average effects, whereby impersonality reigns, there is nothing average about expression. If average dominates, expression fades. Through human expression (Whitehead 1938/1968, p. 26):

nature seems to have burst through another of its boundaries. The conceptual entertainment of unrealized possibility becomes a major factor in human mentality. In this way, outrageous novelty is introduced, sometime beatified, sometime damned, and sometimes literally patented or protected by copyright. The definition of mankind is that in this genus of animals the central activity has been developed on the side of its relationship to novelty.

Therefore, according to Whitehead mankind is distinguished by its capacity for the introduction of novelty. This requires a conceptual power which can imagine and a practical power that can effect. In turn, this conceptual power is enormously increased by “language,” which Whitehead sees as the triumph of human ingenuity, surpassing even the complexity of modern technology. Language is the systematization of expression, and human civilization is an outgrowth of language: freedom of thought is itself an outgrowth of language. Whitehead raises language to a mystical role by stating that The souls of men are the gift of language to mankind. [...] *He gave them speech, and they became souls* (Whitehead 1938/1968, p. 41).

Finally, mankind can strive to interpret the universe in a quest for “understanding.” However, this goal is not reachable with our finite limitation, as “a complete understanding is a perfect grasp of the universe in its totality. We are finite beings,

and such a grasp is denied to us. [...] We can know anything in *some* of its perspectives. The totality of perspectives involves an infinitude beyond finite knowledge” (Whitehead 1938/1968, p. 42). This fact should not discourage us, as for Whitehead the essence of great experience is penetration into the unknown, the unexperienced.

Whitehead’s Legacy

Following Whitehead’s death, all of his papers were destroyed according to his explicit instructions. This element adds to the difficulty of assessing his influence and legacy, considering also the fact that during his lifetime he had many students but was not able to found a school of thought. Certainly, his determination in working on metaphysics was one of the main reasons why his thought was considered anachronistic at the time. However, Whitehead’s ideas in the third millennium are being revisited and revalued, and therefore his influence is presently undergoing a positive derivative (Mesle 2008).

Process theology, as derived from process philosophy, was perhaps the first item in the revival of Whiteheadian thought, thanks in particular to the activity of the Claremont School of Theology, as well as of the University of Chicago Divinity School. Charles Hartshorne, a prominent intellectual in the Divinity School in the years 1928–1955, considered that Whitehead had been a scientist at the level of Einstein and a philosopher at the level of Plato. A few tens of years later, the theologian John B. Cobb, Jr. embraced wholeheartedly the work of Whitehead and founded the journal of *Process Studies* in 1971 along with Lewis Ford, as well as the Center for Process Studies in 1973, in collaboration with David Griffin, in Claremont. A biannual International Whitehead Conference has been organized since 1981, the last edition of which (at the time of writing) was hosted by the University of Brasilia in August 2019. Recently, the most rapid trend of growing interest in

Whitehead’s work can be traced in China, in an effort to blend its traditional philosophies of Buddhism, Taoism, and Confucianism with the postmodern process philosophy. Multiple university centers for the study of Whitehead’s philosophy are being built in China.

However, it is important to underline that Whitehead’s influence today is far from being limited to the domain of religious-philosophical studies. For example, in the world of physics, the explanatory framework proposed by Rovelli (2017) is very much in line with a Whiteheadian interpretation, given that for Rovelli in the framework of quantum mechanics, there is no reality except in the relations between physical systems. The world of quantum mechanics is not a world of objects but a world of events. In the field of sociology, Halewood (2013) maintains that perhaps Whitehead was the most sociological of philosophers, due to his visions of things as “organisms” and thus “societies.” Finally, in the field of creativity and innovation studies, it can be stated that Whitehead’s approach to creativity as the fundamental construct of process philosophy, whereby potentiality is the eternal object and actual entities are dynamic instantiations, is in accordance to the dynamic definition of creativity (Corazza 2016): “creativity requires potential originality and effectiveness.” Also, the interconnectedness of all creativity episodes in the history of the world to form an active ensemble leads to the definition of the “dynamic universal creativity process” (Corazza 2019), conformant to Whitehead’s view of creativity as the ultimate principle of metaphysics. Certainly, Alfred North Whitehead and his process philosophy should be granted a central role in the study of the possible.

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The Possible in the Life and Work of George Herbert Mead

Jack Martin

Department of Psychology, Simon Fraser University, Burnaby, BC, Canada

Abstract

George Herbert Mead (1863–1931) was an influential American pragmatist and social psychologist whose work assumed the inseparability and mutual reconstruction of human agency and the life world of persons. The exact manner of this relation is the subject of his social psychology. The harnessing of this relation with respect to human flourishing is the primary concern of his moral psychology. The former offers an explanation of how possibility emerges at the nexus of human agency and sociality. The latter offers a means of directing and adjudicating such possibility as it unfolds. In these ways, Mead is a useful guide to *the possible* in human conduct and life. His ideas have proved both enduring and provocative. His theories of the self, personal development, generalized others, sociality, emergence, agency, and social reconstruction continue to inspire and challenge many contemporary social theorists.

Keywords

George Herbert Mead · American pragmatism · Perspectival realism · Human agency · Sociality · Emergence in self and social development · Social Psychology · Moral psychology

Introduction

As his friend and colleague John Dewey recognized, George Herbert Mead was a theorist of *reconstruction*. For Dewey and Mead, one of the most basic problems of philosophy is the problem of reconstruction:

How are we to unite in a coherent way the presence of those relatively settled orders to which the name of all uniformities, laws, universals is given with the unremitting occurrence of individuality, novelty and the unpredictable? The idea of continuity, of remaking, of reconstruction was with Mr. Mead more than an idea in any abstract sense of the word; it was an immediate and lived feeling. (Dewey 1936, p. 329)

Mead “was continually engaged in the reconstructive development of his own ideas” (Dewey 1936, p. 330), which perhaps explains why he published so little during his lifetime. In his revised introduction to an edition of Mead’s essays on social psychology published in Strauss 1977, Anselm Strauss also applauds Mead’s “philosophical handling of the relations between permanence and change—that is the problem of continuity” (p. xii) as a major achievement. Strauss adds that it is an achievement that has yet to be fully and properly appreciated by most social scientists whose selection “from Mead’s writings was very restricted” (p. xii). In particular, Mead’s central “concept of perspectives . . . has not penetrated sociological thinking much nor has its implication for social change been understood” (p. xii). Because Mead’s conception of *perspectives* is so central to his handling of the problem of reconstruction (of reconciling continuity and change) and speaks so directly to what is possible in human affairs, its elaboration and explanation, within his theories of social and moral psychology, helps to clarify Mead’s primary contribution to what is possible in human life and conduct.

During his lifetime, Mead published about 60 articles, many of which were short reviews, notes, abstracts, reports, and commentaries somewhat incidental to his major ideas and subsequent contributions. All Mead’s books were based on his lectures and papers and were compiled, edited, and published by his friends, students, and others after Mead’s death in 1931. These include *The Philosophy of the Present* (1932); *Mind, Self, and Society* (1934); *Movements of Thought in the Nineteenth Century* (1936); *The Philosophy of the Act* (1938); *The Social Psychology of George Herbert Mead* (Stauss 1964); *George Herbert Mead: Selected Writings* (Reck 1964); *George Herbert Mead: Essays on his Social*

Philosophy (Petras 1968); *Play, School, and Society: George Herbert Mead* (Deegan 1999); and *Essays in Social Psychology: George Herbert Mead* (Deegan 2001).

Mead was born on February 27, 1863, in South Hadley, Massachusetts, to Reverend Hiram Mead and Elizabeth Storrs Mead, a teacher who served as president of Mount Holyoke Seminary and College. Mead himself studied at Oberlin College and pursued graduate studies in philosophy and psychology at Harvard and later in Germany. Although never receiving a doctorate, Mead returned from Germany to take a position at the University of Michigan at the invitation of John Dewey, whom he later followed to the University of Chicago where he remained until his death.

American pragmatism of the kind practiced by George Herbert Mead takes the position that “knowing the world is inseparable from agency within it. . . . [I]f a philosophical theory does not directly contribute to human progress then it is not worth much” (Legg and Hookway 2019). Mead’s entire oeuvre assumes the inseparability and mutual reconstruction of human agency and the life world of persons. The exact manner of this relation is the subject of his social psychology. The harnessing of this relation with respect to human flourishing is the primary concern of his moral psychology. The former offers an explanation of how possibility emerges at the nexus of human agency and sociality. The latter offers a means of directing and adjudicating such possibility as it unfolds. In these ways, Mead is a useful guide to *the possible* in human conduct and life.

Mead’s Social Psychology

The concept of *perspectives* is central to Mead’s philosophy of reconstruction. It pervades his theories of the self and personal development, the generalized other, sociality, emergence in social relations and via communication, intelligent social control and social reform, and science itself. It also underpins the promise of possibility that is ever present in Mead’s oeuvre. For Mead, “the mind in its reconstructive functioning is ‘a realm of continual emergence,’ and the emergence of

novel ideas in the mind is made possible by the social interplay of alternative roles and perspectives” (Cook 1993, p. 159).

The term *perspective* was not used by Mead until about 1920, after which time he developed what has been termed a philosophical position of *perspectival realism* (Martin 2005). Although Mead came to prefer the term *perspective*, he often used expressions such as “taking the role of the other,” “taking the attitude of the other,” and “taking the perspective of the other” interchangeably. For Mead, a perspective is an orientation to a situation that emerges through acting within that and similar situations. All perspectives arise out of human conduct, especially social exchange and interaction. Nonetheless, once entered into through situated conduct and interactivity, perspectives can take not only performative but also perceptual and conceptual forms. Hence, perspectives arise in situated interactivity but are not fixed to the particular contexts and times that mark their origins. Once experienced, perspectives can be used imaginatively.

The perspectival reality that matters to human beings (to persons) is not “out there,” independent of individuals and their actions, nor is it “in” individuals. It consists of the dynamic, ongoing interrelation of individuals acting within their life contexts. Our perspectival reality emerges out of “the relationship between the individual and the environment, and this relationship is that of conduct [i.e., action]” (Mead 1938, p. 218). For Mead, action with others in social contexts has both phylogenetic, historical, and ontogenetic, developmental primacy over isolated reflection of the kind privileged in much modern thought. During ontogenesis, it is through the child’s active and repetitive participation in routine action sequences with others that the child is able to take the perspectives of these others and learns to coordinate and comprehend different perspectives.

Mead (1934) often illustrated the emergence of perspectives within social interactivity with examples drawn from children’s games and routines such as hide-and-seek, tag, and various other forms of turn taking that involve repetitively moving between different positions, e.g., between

the positions of *hider* and *seeker*, *giver* and *receiver*, *speaker* and *listener*, and so forth. One is unable to be a hider without also being about to take the position, role, and perspective of a seeker. Similarly, later in life one cannot function as a buyer without being able to function as a seller. Through such interactivity, the child or the adult gradually is able to functionally coordinate two or more positions (e.g., that of hider and seeker or that of buyer and seller) by recalling, orienting to, and anticipating one position while acting in the other. Such functional simultaneity of related and organized positions and perspectives is what Mead means by sociality. The child or adult becomes “an object to himself by taking the attitudes [perspectives] of others toward himself within an organized setting of social relationships” (Mead 1934, p. 225).

It is by taking, exchanging, and coordinating different positions, and the perspectives associated with them, during social interactivity that we develop a sense and action-based understanding of ourselves as subjects and objects. In addition to taking the perspectives of particular others with whom we interact, such perspective taking, exchange, and coordination also enable us to take the perspective of various “generalized others,” i.e., of social groups, communities, or societies as a whole. For example, to take on the position and perspective of a second base player in baseball requires entering into the positions and perspectives of the other players. To function as a family member, one must view oneself from the perspectives of other family members and the entire family system.

When a child or adult is able to act and orient to herself as others do, she behaves as a *me*, as a member of a social group. The “me” represents “the value of the group, that sort of experience which the group makes possible. Its values are the values that belong to society” and which give a “structure to things” without which “the life of the self would become impossible” (Mead 1934, p. 214). With the emergence of a “me,” the child can both connect to and distinguish herself from others. “One attains self-consciousness only as he takes, or finds himself situated to take, the attitude [perspective] of the other” (Mead 1934, p. 194).

However, through social interactivity the child also responds in her conduct to the perspectives of others (both particular and generalized others) as an “I,” the “values of which are found in the immediate attitude [perspective] of the artist, the inventor, the scientist in his discovery, in general in the action of the ‘I’ which cannot be calculated and which involves a reconstruction of the society, and so of the ‘me’ which belongs to that society” (p. 214).

For Mead, the “I” and the “me” are not meta-physical distinctions and certainly not metaphysical entities. They are functional distinctions concerning modes of personal being within social conduct. In reflecting one’s social experience and the perspectives of others, the “me” takes itself as an object formed by life experience drawn from the immediate and distant past, understood as the sequence of “presences” that a person has lived through. In reflecting one’s barely glimpsed immediate perspectives, the “I” is an agentive subject moving into an uncertain future as a creator of experience and action, experiences and actions that once achieved pass immediately into the “me,” while the ever active, agentive “I” forges ahead with only the merest glimpse of itself in passing. The distinction between and the functioning of the “I” and the “me” are among the most debated and criticized aspects of Mead’s perspectival realism. Yet, the functional distinction between these two modes of personal being is closely linked to Mead’s ideas concerning the continuous, mutual emergence of persons and their life world. The entry for “► [Position Exchange Theory](#)” in this handbook offers further discussion and clarification of the emergence of self and other understanding and personal agency from a neo-Meadian perspective.

Once developmentally emergent, all persons, children, and adults are locked into a process of continuous perspectival reconstruction that opens to a world of constrained possibility. In later childhood and adulthood, interaction and communication with others are increasingly driven by what Mead calls “significant symbols.” The use of these linguistic tools marks an important transition from communication through gestures and positions to conversation through a

shared language. This transition dramatically accelerates and multiplies the perspectives and possibilities that can be acquired and exchanged with others by adding a symbolic order to the physical interactivity of the infant and younger child. Significant symbols “call out” in the person who gestures or speaks a functionally similar response to that they demand or intend from those to whom they are directed. For example, if a preoccupied friend fails to respond immediately to my request to share a section of the newspaper she’s reading, I might help myself to a section of that same newspaper. Using a shared language assists speakers and listeners (or writers and readers) to immediately grasp nuances and variations in perspectives communicated that would mostly be unavailable without the significant symbols of language. As our individual lives and linguistic, communicative competence progress, we become capable of much more abstracted, reflective, purposeful, and higher-level forms of perspective taking, exchange, coordination, and reconstruction that draw from both direct and vicarious experience. Whenever we take the perspective of another or a group of others, we reconstruct ourselves and enter into the simultaneous reconstruction of others and the social groups and structures within which we interact.

What allows Mead’s perspectival realism to function as both an opening for possibility and a constraint on human conduct is the organization of perspectives within the biophysical and socio-cultural world. Through their interactivity and experience in this world, it is possible for individuals, collectively and individually, to subject their perspectives to appropriate forms of test. The organization of human conduct within social contexts and structures is constantly changing but nonetheless typically provides sufficient stability for individual and collective problem-solving. In other words, it balances continuity and change, which is the basic requirement of the ongoing process of reconstruction that Mead and Dewey understood as central to human experience and life.

At the beginning of interactions with others in problematic circumstances, all that might unite the different perspectives of potential problem-

solvers may be a shared desire to remove a difficulty that confronts all of them. However, over time, and with accumulated interactions and exchanges concerning a variety of possible strategies and actions, problem-solvers are likely to gain a greater understanding and appreciation of the feasible possibilities potentially available to them. What ultimately organizes these various perspectives and possibilities is the extent to which they achieve collective support among those intent on resolving the problem or difficulty at hand. Typically, perspectives and their associated possibilities are organized in terms of their utility and viability within the problem situation and related contexts, immediately and in the foreseeable future. The discussion and organization of a viable plan of action “leads to creative reconstruction. In so far as the world is passing into a future, there is an opportunity for that which is not objective to become objective” (Mead 1938, p. 613). Such problem-solving both requires and enhances the sociality of all those involved because it promotes each participant’s consideration of a diversity of perspectives through which they are able to prepare themselves for emergent events that inevitably will have novel, unexpected consequences. For Mead, the immediate moment of action brings together a concern of the present with both recollections of relevant past activity and anticipations of a future in which the concern or problem to which the action of the present is directed is resolved or somehow made manageable.

At a personal level for each problem-solver, the “me” to which the “I” is reacting is determined within a knowable past. On the other hand, the “I” of the moment must act in circumstances that are not entirely predictable from the past and which are in part explicable in terms of an imagined future state in which the concern or problem of the moment somehow has been ameliorated. In these instances, the person occupies two distinct temporal perspectives, one in which the “me” as object is determined and another in which the “I” as agent is not determined. Of course, once the action in question takes place, it, together with whatever perspectives or perspectival transformations it might occasion, becomes part of a “new”

knowable past, which can be used to anticipate a newly emergent concern of the moment and a “new” future. And so it goes.

Mead’s Moral Psychology

After Mead followed Dewey to the University of Chicago, he developed a secular, “functionalist moral psychology that construed moral problems, moral consciousness, and moral decision-making as functional phases of a reconstructive process taking place within human conduct” (Cook 1993, p. 116). This moral psychology was later reworked after he had developed the social psychology just described. Mead consistently believed that moral progress occurs through reconstruction in attempts to resolve moral problems.

Moral problems stem from competing perspectives in the social organization of the self, which often takes the form of an internalized conversation, with a covert articulation of each perspective calling out a response in the other perspectives.

Assuming as I do the essentially social character of the ethical end, we find in moral reflection a conflict in which certain values find a spokesman in the old self or a dominant part of the old self, while other values answering to other tendencies and impulses arise in opposition and find other spokesmen to present their cases. . . . The result is that we state the other conflicting ends in subjective terms of other selves and the moral problem seems to take the form of the sacrifice either of the self or of the others. Where, however, the problem is objectively considered, although the conflict is a social one, it should not resolve itself into a struggle between selves, but into such a reconstruction of the situation that different and enlarged and more adequate personalities may emerge. Attention should be centered on the objective social field. . . . In the reflective analysis, the old self should enter upon the same terms with the selves whose roles are assumed, and the test of the reconstruction is found in the fact that all the personal interests are adequately recognized in a new social situation. The new self that answers to this new situation can appear in consciousness only after this new situation has been realized and accepted. . . . Solution is reached by the construction of a new world harmonizing the conflicting interests which enter the new self. . . . The growth of the self arises out of a partial disintegration—the appearance of the different

interests in the forum of reflection, the reconstruction of the social world, and the consequent appearance of the new self that answers to the new object. (Mead, in Reck 1964, pp. 148–149)

To overcome a dominant self-perspective requires an approach to moral problems that attempts to do justice to the various competing personal and social interests present within the problem situation, allowing them to enter into a dialogue as equally plausible alternatives. Instead of clinging to old selves and their attendant perspectives, such a dialogue aims at a reconstruction of the situation that allows a new “enlarged and more adequate” (Mead in Reck, p. 148) self and perspective to emerge. Thus, what appear as intractable moral problems only can yield to a process and logic of moral reconstruction in the face of problems or conflicts. The successful moral reconciliation works by combining and tailoring conflicting values and perspectives within a more inclusive self and emerging social cohort.

Mead applied his multiperspectival, integrative approach to moral problems to national and international conflicts between nations in an essay entitled “The Psychological Bases of Internationalism” (Mead 1915), a series of newspaper essays he published in the *Chicago Herald* during 1917, and in his later essay “National-Mindedness and International-Mindedness” (Mead 1929). In these works, he treats the genesis of national self-consciousness as analogous in important functional respects to the genesis of individual self-consciousness, arguing that nations, like individuals, only can see themselves through the eyes of others and come to understand themselves more fully only by participating in a larger social process and order. In the aftermath of World War I, Mead pleaded that both nations and their citizens must strive to move toward wider and more productive and inclusive forms of international consciousness. In his essay “Philanthropy from the Point of View of Ethics,” Mead states that it is the morally reflective person’s “feel for a social structure which is implicit in what is present” that provides “a sense of obligation which transcends any claim that his actual social order fastens upon him” (reprinted in Reck 1964, p. 404). In the face of a moral problem or conflict, it is this sense of obligation that searches actively for a hypothetically alternative

order within which the problem or conflict can be reinterpreted and resolved. “It is an ideal world that lays the claim upon him, but it is an ideal world which grows out of this world and its undeniable implications” (in Reck 1964, p. 404).

Mead’s moral psychology calls on persons to recognize their common status as socioculturally constituted beings whose customs, habits, and values appear as individual goods that they share with others within their community and to recognize that the same is true for diverse individuals dwelling and living in other communities. In so doing, it becomes clear that, given this inevitable state of affairs, the only way forward is somehow to transcend the local orders of the various communities in conflict. Mead’s proposal is to encourage such transcendence by imagining hypothetical social orders within which individuals and nations in conflict can place themselves outside their differing community orders as they currently exist and construct possibilities for functioning within a new and shared social order that encourages common actions to resolve conflict, actions based on commonly recognized conditions of conduct and common ends.

Like his social psychology, Mead’s moral psychology has attracted numerous critics. For example, Hans Joas has accused Mead of insufficient insight into his own nation and excusing its practices of power, thereby inadvertently falling “into the sins of nationalism” (Joas 1997, p. 25). Mead understood the First World War as a “contest between democracy and autocracy” (Cook 1993, p. 123), and his subsequent internationalism arguably retained a demonstrably American perspective. Indeed pragmatism itself is tightly entwined within various strands of American life and values. Others have recognized what they consider to be unfortunate gaps and inadequacies in both Mead’s social and moral psychologies to which they have proposed modifications and extensions (e.g., Gillespie 2005; Martin 2005).

Conclusion

Whatever the strengths and weaknesses of his social and moral psychologies, Mead undoubtedly must be considered one of social science’s

most significant thinkers about possibility, specifically what is potentially possible with respect to humans' command and direction of their personal and collective conduct with respect to the furtherance of human beneficence. As mentioned earlier, Dewey recognized that Mead was driven by an urgency to understand how human continuity could survive human ingenuity. As Dewey also recognized, Mead's own oeuvre is testimony to and illustration of the constant process of reconstruction Mead thought essential to human flourishing in a world of diverse and often competing perspectives.

In a recent commentary, Glăveanu (2019) describes Mead's lasting contribution to our understanding of creativity as steeped in human sociality.

We are capable of creativity not because we are separate from others and distinct from them; on the contrary we gain our individuality from being able to engage with the perspective of others and creatively transform it and ourselves in this process. The emergent self is, in this sense, not individual *despite* being social but, rather, *because* of it. (Glăveanu 2019, pp. 443–444)

Mead's perspectival realism places creativity and possibility within an always present human sociality constituted by our everyday positioning within our own perspectives and those of others with whom we interact. Feats and accomplishments that we recognize and deem creative do not differ in kind from the quotidian adjustments we make to our acting and thinking as a consequence of interacting with others directly and indirectly. Sociality as the functionally simultaneous immersion in multiple perspectives is endemic and inescapable in the lives of persons in interaction with others. Our social lives with others are constant resources of possibility that reside in the fusion and integration of perspectives in ways that solve problems and yield advances, both minor and major. Those we consider geniuses:

make the wider society a noticeably different society ... simply by carrying to the *n*th power this change in the community ... [T]hey have enlarged and enriched the community. ... They represent, in their personal relationships, a new order, and then become representative of the community as it might exist if it were fully developed along the lines that they had started. (Mead 1934, pp. 216–217)

Reconstruction involves the building of something new from what is past, current, and evolving. Perspectives fuel reconstruction as they ebb and flow, come together, and separate, charting a course for the future framed, yet eclipsed by an unfolding present moving into an only semi-predictable future. The person in her reconstructive functioning is caught up in a realm of continual emergence. The emergence of novelty in persons and their social contexts and practices is a consequence of the interplay of individual and collective perspectives. It is this world of perspectival possibility that Mead explored and theorized in his writings in social and moral psychology, which constitute his unique contributions to American philosophical pragmatism.

Yet, against the positive and progressive examples and images in his writings about possibility and change, human interactivity concerning different perspectives also includes regressive and destructive possibilities that might emerge, and have emerged, throughout our collective history of interactive and attempted perspectival sociality. There is nothing in Mead's social psychology that necessarily guards against such more dire possibilities. Whether or not his moral psychology, with its themes and assumptions of cooperative accommodation and open-mindedness, has sufficient resources to provide such safe guards is an open question, but one that probably cannot be left to optimism alone.

Nonetheless, Mead's writings repay attention. In Dewey's memorial tribute to Mead, he emphasized the reconstructive power of Mead's ideas, saying that they "worked a revolution in my own thinking, though I was slow in grasping anything like their full implications" (Dewey 1931, p. 313). Mead's oeuvre continues to invite re-examination and elaboration for the insights it contains concerning what is possible through human agency and sociality.

Summary

George Herbert Mead's social and moral psychologies constitute an innovative and important body of ideas concerning possibility in human social life. His attempts to explain and reconcile human

continuity with ongoing change in both selves and societies offer much to both social theorists and reformers. By carefully considering and interpreting interactions with others as involving a continual exchange and interplay of positions and perspectives, Mead developed original and progressive social and moral psychologies that continue to demand the attention of scholars in the social sciences and beyond.

Cross-References

- [American Pragmatism](#)
- [Constructivism](#)
- [Creativity](#)
- [Dialogical Self Theory](#)
- [Emergence](#)
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- [Imagination](#)
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- [Possible in Education](#)
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- [Possible in John Dewey](#)
- [Social Change](#)
- [Uncertainty](#)

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The Possible in the Life and Work of Gregory Bateson

Wolfram Lutterer

Central and University Library, Lucerne,
Switzerland

Abstract

The Anglo-American anthropologist Gregory Bateson is one of the core thinkers of a systemic worldview, inspired by cybernetics. His thoughts also include ecological issues. Though he did not strictly argue about the possible, his work delivers several hints and aspects into a broader understanding. This entry presents 10 aspects of Bateson's work

in relation to the possible with focus on communication, on behavior, and on philosophical issues. A systemic approach inspired by Bateson also includes observations about the “not possible” and the “not desirable.”

Keywords

Gregory bateson · Possible · Systemic thinking · Systemics · Cybernetics

Scientific and Biographical Issues

Bateson's live and work are already subject of a comprehensive biography by David Lipset (Lipset 1982). There are also two major studies by Peter Harries-Jones, one focusing on his later works (Harries-Jones 1995), and the other one taking broader view, beginning with his early writings (Harries-Jones 2016). The maybe most authoritative study on Bateson's theory of mind and on ecological issues in his work is given by Noel G. Charlton (Charlton 2008). Finally, there is an analysis of his complete works by Wolfram Lutterer (Lutterer 2000). Therefore, this section will be quite short.

Bateson was kind of a “scout” (Toulmin 1982; 201), a pioneer or a wanderer in and between different scientific fields. Beginning as an anthropologist in the 1930s, he started with explorations on a tribe of former headhunters in New Guinea (Bateson 1936), followed by a photographic study of *Balinese Character* with Margaret Mead in the early 1940s (Bateson and Mead 1942). In the late 1940s, he was part of the famous *Cybernetics Group* (Heims 1991) (see Cybernetics). This resulted in the development of a highly influential communication theory that he co-authored with the psychiatrist Jürgen Ruesch in the early 1950s (Ruesch and Bateson 1951), and which resulted eventually in the shaping of his own scientific approach. The focus on research on communication was also core of his following research, being this on play and fantasy, on the communication patterns of schizophrenics and thereby in his famous *double-bind-theory*, all in the 1950s.

A further change of his scientific scope brought him even into the exploration of the

communication of octopuses, and also of dolphins in the 1960s (cf. Bateson 2000). In 1962, Bateson finished his research in Palo Alto and wandered also professionally into dolphin research, first in the Virgin Islands and later in Hawaii.

The 1960s were also a time of a growing understanding of ecological issues. One of the most influential writings of that time was Rachel Carson's *Silent Spring* (Carson 1962), perhaps a kind of a wake-up call also for Bateson himself. Anyway, in a short and dense essay on the *Roots of Ecological Crisis*, he mentions Carson's book as the only one scientific source (Bateson 2000, p. 496). Thus, Bateson's most important life topic was borne: from cybernetics to communication theory, then to ecology, to systemics, to a new theory of mind, in building a new approach to ecology and also to evolution theory, and developing a systemic view up to a reflection to the meaning of the sacred. Topics such as these cover about a third of the essays collected in *Steps to an Ecology of Mind*, published in 1972 (Bateson 2000). In the same year, Bateson moved to Santa Cruz, California, to teach at the university, culminating in his appointment as one of the Regents of the University of California in 1976.

This scientifically fruitful period included another monograph, a first synthesis of his systemic approach, entitled *Mind and Nature* (Bateson 1979). Bateson died one year later while working on another even more far-reaching book, published some years later by his daughter Mary Catherine Bateson: *Angels Fear: Towards an Epistemology of the Sacred* (Bateson and Bateson 1987). In addition to this, Rodney E. Donaldson published a second collection of Bateson essays, titled *A Sacred Unity* (Bateson 1991).

Research on Bateson

A complete bibliographic survey of research inspired by Bateson (hereafter also abbreviated as “GB”) or even of the research on his works does not yet exist. Therefore, we can only give some clues.

Beginning in the late 1970s, there were published three main somehow “classic”

collections of essays on GB (Brockman 1977; Wilder-Mott and Weakland 1981; Rieber 1989). These all provide a fairly intensive overview of how his work was understood at that time. But surely it is more inspiring to take a look on some more recent publications. The already mentioned Noel G. Charlton declares to give “an accessible introduction to the work” of GB (Charlton 2008, p. 1), but in fact he provides more and less in one, as he puts a strong focus on GB’s late works. In context of the ecological crisis, Charlton discusses GB’s theories of mind, of beauty, and especially of the sacred. Building on this, Yoni van den Eede delivers a study of a possible “Batesonian Philosophy of Technology” (Eede 2019), in which he observes a subtle disappearance of technology, but just this also embedded in GB’s theory of mind. In an also philosophical approach, Morris Berman draws a loop from the Age of Enlightenment to a possible “reenchantment of the world” (Berman 1981).

GB’s early works were issue of a study by Arthur Chaney (Chaney 2017) and also by Peter Harries-Jones (Harries-Jones 2016). Both draw also outlines into his later writings. More focused on GB’s theory of mind and nature, Roger Duncan explores a “Nature in Mind,” in following GB’s “unfinished business” consisting in a new connection of mind with nature (Duncan 2018, p. 2). GB is also viewed as a “precursor to biosemantics” by Jesper Hoffmeyer and others (Hoffmeyer 2008). A rereading, and an extension of GB’s learning theory in a synthesis with Jean Piaget, is done by Wolfram Lutterer (Lutterer 2011).

Although not the classical kind of research, a dense approach to GB is provided by his daughter Nora Bateson with her partially autobiographic film, which is surely the most direct and rapid access to a Batesonian way of thinking (Bateson 2011).

Bateson and the Possible

Bateson’s work contains multiple reflections related to “the possible.” This section highlights some of GB’s insights on the way to a more comprehensive approach to the possible,

following some chronological paths throughout his writings in 10 steps.

First Step: Strict and Loose Thinking

As early as 1941, GB muses about conditions for the scientific progress itself. How does science proceed and how could this process possibly be accelerated? He observes two processes that have to work together. First, there is “loose thinking,” meaning the development of new ideas and this often by pure speculations, and therefore “building of an edifice,” but still on rather rough foundations. The second process is the “correction of the foundations,” which can happen years or decades later. These two he describes as a necessary combination of “strict and loose thinking” (Bateson 2000, p. 86). Thus, he observes a dual nature of the scientific progress. One needs both, the “loose” thinking, perhaps even purely speculative thinking, but also the “strict” thinking that embeds new thoughts into the scientific process, developing and altering science as such. So, this is the first of my “steps to the possible” in regard to GB. You have to put up with creativity and maybe also sometimes seemingly crazy ideas to come up with something new. Bateson himself will rephrase this in his use of Charles Peirce’s idea of “abduction,” later on.

Second Step: Meta-communication

In 1951, GB publishes with Jurgen Ruesch *Communication: The Social Matrix of Psychiatry*, a book that has influenced many, from Paul Watzlawick (Watzlawick et al. 1967), to John Grinder and Richard Bandler (Bandler and Grinder 1975), up to systems theorist Niklas Luhmann (Luhmann 1995).

Bateson and Ruesch offer therein a distinction between “communication” and “meta-communication.” Communication is never “pure” in the sense of that time information theory (see Shannon 1948), there is no pure sending and receiving of data or of information. Any understanding of the exchange of information between a sender and its receiver is dependent of several conditions, in particular “all exchanged cues and propositions about (a) codification and (b) relationship between the communicators”

(Ruesch and Bateson 1951, p. 209). These processes of codification and of relationship were defined as *metacommunication*: The understanding of the meaning of given words is dependent from the metacommunication, for example, in talking just ironically about something. Bateson further develops this into his ideas about context and also about relationship. And he emphasizes: By metacommunication, we discuss also the “patterns of our relationship” *prior* to the possible content of the communication (Bateson 2000, p. 372).

Third Step: Context

The concept of “context” is crucial in this whole discussion. It is developed in a short essay containing a speculation about play and meta-communication, entitled *A theory of play and fantasy*, a lecture held in 1954. It seems somehow fitting that the notion of context – or alternatively: *frame* – is developed in the context of something else. GB’s ideas about context were echoed by Erving Goffman (cf. Goffman 1974) and by Steve de Shazer (Shazer 1985).

GB observes the play of animals, especially of young monkeys and also of fish otters. The point here is that many animals are able to distinguish between a real threat and one given only in play. Three types of contexts or frames are discussed hereby: messages that are “mood-signs,” “messages which simulate simulate mood-signs,” and also messages which help the receiver to distinguish between both (Bateson 2000, p. 189). Therefore, also animals are able to meta-communicate. A playful bite is not a real bite and is understood as such, and in our human world: Watching *Hamlet* on the stage shouldn’t bring the audience to call the police because of the given information about death and possible suicide (Op. cit., p. 290).

The discussion about frames brings GB to the phenomenon of paradox: The “playful nip” doesn’t only denote a bite itself, the “bite itself is fictional” (Op. cit., p. 182). In this discussion about contexts and frames, the possible emerges in several ways. A frame provides a necessary piece of information about the interaction it frames. Without context, there is no meaning.

However, a frame can also be altered, a realization that is fruitful especially in psychotherapy. Bateson concludes his discussion of context – and of frame – with a remark what would be without our ability to metacommunicate: “Life would then be an endless interchange of stylized messages, a game with rigid rules, unrelieved by change and humor” (Op. cit., p. 193).

Therefore, a discussion about the possible is also a discussion about context. Bateson’s next step is to discuss the communication of schizophrenics by *double bind theory* (Bateson 2000, p. 201; see also Sluzki and Ransom 1976). But even more at the question of the possible is his learning theory.

Fourth Step: Learning to Learn

Bateson’s learning theory can be seen as another aspect of context sensitivity. All in all, GB distinguishes five levels of learning (Learning 0 to Learning IV, see Bateson 2000, p. 279), but on this point only the difference between *Learning I* and *Learning II* will be discussed. Appropriately, the development of this theory had also its stages in covering a long period, from 1942 to 1971.

Basically, Learning I is comparable to our understanding of everyday learning, and therefore, for example, how you learn to drive a car, in learning some new vocabulary, or in learning some news about the world. In fact, the classical psychological learning experiments cover usually just Learning I: You know, or you do – or sometimes even do not – something you didn’t before. As GB mentions, “learning I is change in specificity in response by correction of errors within a set of alternatives” (Op. cit., p. 293). But learning like this stands inevitably in a context, or more precisely: it is a double-sided process where repeated learning situations influence the expectation how learning should be. But also, the other way around: our expectations themselves frame, what and how we will learn. This is in quite short Learning II. For GB, our worldview and even our character are a result of (or alternatively correlate with) Learning II.

GB’s learning theory is at the background of Pierre Bourdieu’s concept of *habitus* (Bourdieu 1984). In regard to the possible, GB’s message at

this point would be: You are not just “dependent” or “narcissistic” by yourself, these are also results of repeated learning experiences, and this all his just behavior in context to other behavior, therefore not simply “inside” yourself. Therefore, Learning II is double-sided in itself: in case of habitus, it tends to blockade new experiences, but it also stands for the fact that our deep truths about reality are only constructions and thus changeable. So, the possible can be made impossible just by our expectations – and vice versa.

Fifth Step: Cybernetic Explanation – The Impossible

If one were ever trying to construct a complete theory of the possible, it would necessarily also include its opposite, the *impossible*. At this point, it might be helpful to think about the “Cybernetic Explanation” as GB sees it (Bateson 2000, p. 495). The main difference between the common causal explanation and the cybernetic explanation is that the former is “usually positive” while the latter is *negative*. The question shifts from “how has this happened” to “what else could have been possible and what has hindered it from to be happened” (Op. cit., p. 405). Therefore, cybernetic explanation is looking for restraints. The idea is not be satisfied with the too easy and always reductionist approach that causal theories suggest that just one event is the reason for another and so on.

Cybernetic explanation as GB understands it seems therefore a standard wherever multi-causality or complexity are included even if not mentioned as such. You take a look at the alternatives and why they didn’t occur. Even a seemingly simple event like a car accident is seldom so simple to explain that one has just hit the other, and that’s it. A satisfying description of an event just like this wouldn’t be complete, and on behalf of science – as also juristically – is therefore basically flawed.

Sixth Step: Information as a Difference

The possible is not always the desirable. This could be a consequence of a systemic view on information. The conventional understanding of information desires especially from the so-called

information theory of Claude Shannon. The idea thereby is that a sender sends, and the receiver receives information, and the only question between both of them is if data channel is sufficient for the transmitted signals (Shannon 1948). But this covers only a *mathematical* sense of signal transmitting. But do you really use mathematics to understand the meaning of information?

Bateson defines information as “a difference which makes a difference” (Bateson 2000, p. 459), and he bases his argumentation on Immanuel Kant’s *thing-in-itself*. The “piece of chalk” you see “can never enter into communication or mental process” (Op.cit., p. 459). There are only transformations of differences: Of differences between the chalk and its environment and of the perceived differences in the structure of the chalk. So the neural “signal” or “impulse” is better to be defined as “news of a difference.” And this is it what eventually makes another difference in our mind. Is it relevant to see the piece of chalk? Which meaning has it? What is the meaning of that funny lines that somebody draws with the chalk on a blackboard? Seeing information as a difference which makes a difference shows that it is the so-called receiver who decides what and how some given signals are understood as information or as something else, an epistemological fact which was also stressed by Humberto Maturana (Maturana and Varela 1987) and by Heinz von Foerster (Foerster 1980). Therefore, the information somebody likes to share can be possibly received as something else.

Seventh Step: Ecology of Mind

Considering consequences of GB’s thinking, one may come to a similar result like him, by also setting *mind* in a context. His famous example for this is a blind man with a stick: “Where do I start?” Where are the boundaries of the self? At the skin? At the end of the stick? But all these are “nonsense questions” for GB: in his view, *mind* spans the whole system of the information processing. Therefore, “The elementary cybernetic system with its messages in circuit is [...] the simplest unit of mind” (Bateson 2000, p. 465).

So while Sigmund Freud’s psychology “expanded the concept of mind inwards,” GB

expands it outwards (Op. cit., p. 467). GB develops these ideas in opposition to a fundamental flaw in our epistemology as he sees it. It is our “purposive consciousness” which fails in perceiving feedback loops and the “systemic nature” of the individual, of his culture, and also of the “ecological system around him.” This failure consists in cutting out only “sequences” of the systemic structure (Op. cit., p. 440), in the obsession to create cause-effect relations in the shortest possible way. These ideas were developed in two lectures given in 1968 and in 1970, titled *Conscious Purpose versus Nature and Form, Substance and Difference*. These are two of the densest and maybe most fundamental single works of GB. An even more extensive discussion of his theory of mind GB delivers in *Mind and Nature*, including a definition of mind with six criteria (Bateson 1979, p. 101).

But as it seems, GB’s ideas about mind, about epistemology, and also about ontology have often “been misunderstood and misrepresented,” as Noel Charlton points out. But they “contribute vital dimensions to the possibility of our human reintegration into the living world” (Charlton 2008, p. 66). So there still seems to be something almost revolutionary about these ideas, moving away from the old school scientific approach of separating and cataloging phenomena into the systemic way of following relations and interactions in a multiple way. Nevertheless, there seems to be “something elusive about the Batesonian framework” (Eede 2019, p. 13). Small wonder: setting mind in a context and thereby “out of the brain” remains something different.

All in all, GB’s theory of mind represents a far-reaching horizon of possibilities, at which at this place only can be hinted at. Based on this theory of mind, he develops an alternative approach to ecology, and also of our self and of our connectedness with our social and natural environment. Unfortunately, misinterpretations are all too easy: But there is nothing supernatural in GB’s theory of mind, only circular causality, and systemic understanding: “It shows us an interconnected world with humans in membership but not separate, superior, independent, or immune from wider systemic effects” (Charlton 2008, p. 163).

Eighth Step: Double Description

Another step: double description. With a list of nine examples, GB illustrates the idea that “*combining* information from two or more sources” brings a bonus: “two descriptions are better than one” (Bateson 1979, p. 77), also called *double description* (p. 227). The most elemental of his examples is the term of *difference*. You need “at least two somethings to create a difference” (p. 78). Other examples are the binocular vision – seeing with two eyes enables spatial vision – or the discovery of the planet Pluto – irregularities in the orbit of Neptune resulted in the necessary existence of another planet.

GB’s idea of double description can also be applied to the scientific approach itself. Then you observe some behavior not only with the eyes of a psychologist but also through those of a sociologist, a biologist, an economist, a philosopher, or whoever. The point here is not arbitrariness, but a more complete view of a case that breaks away from a simple-minded reductionism. So, the possible arises in an enrichment of the scientific approach to a given case.

Ninth Step: Abduction

How do we draw conclusions? The formal logic proposes for this the so-called *modus barbara* which runs as such: men die; Socrates is a man; Socrates will die. But GB observes that our mental process often runs in a completely different way. His example is “Grass dies. Men die. Men are grass,” also ironically named as “syllogism in grass” (Bateson 1991, p. 240). GB uses here a distinction developed by Charles S. Peirce, called *abduction* (see also abduction). Peirce distinguishes three kinds of reasoning: deduction (e.g., *modus barbara*), induction (e.g. I observe only white swans, therefore all swans have to be white), and abduction (Peirce 1958, p. 5.189).

Following Peirce, GB emphasizes that the *barbara syllogism* is dependent from the “invention of language” whereby the grass syllogism precedes. An abduction already happens when we observe some rules and apply them. GB concludes “all thought would be totally impossible in a universe in which abduction was not expectable” (Bateson 1979, p. 157). An example for

this: Every time you start to draw cash from a cash machine, you simply expect that this machine is similar just like the last one, and that it just doesn't something else.

With a loop back to GB's early work on strict and loose thinking, abductions often happen by the so-called loose thinking. But we necessarily trust in the similarity or even the identity of our environment of yesterday with today. Therefore, abduction has two aspects in relation to the possible: On the one side, abductions make the possible just possible. But on the other side, it can also hinder new possibilities, especially if we insist that our world of today would be just the same as of yesterday. This can be observed, for example, in the denial of the arisen ecological crisis and is also a result of a Learning II process, as GB sees it.

Tenth Step: The Sacred and Noncommunication

Again: the possible is not always the desirable. This is, in short, a result from GB's ideas about an "Epistemology of the Sacred," so the subtitle of his unfinished last book *Angels Fear*, some years later edited, enriched, and completed by his daughter Mary Catherine Bateson (Bateson and Bateson 1987).

GB observes therein phenomena which demonstrate that "*not communicating* something under some circumstances" is sometimes important (Op. cit., p. 79). One of the given examples is a story inside a story. GB delivered a speech at the Californian Governor's Prayer Breakfast in 1975. He told a story about Native Americans who were not willing to be photographed in order to save their religious rituals involving psychedelic substances. But taking pictures would have brought their "very personal matter of prayer" (Op. cit., p. 72) to the public, which was just impossible for them. So, the Native Americans declined and risked the acceptance of their rites as religious. GB's speech itself resulted in the interdiction of photographing of the participants of the event, since this too would be "a sacred and not a secular occasion" (Op. cit., p. 75). GB comments this that sometimes "communication is undesirable, not because of fear, but because communication would somehow alter the nature of ideas"

(Op. cit., p. 80). This phenomenon he also describes as something which could be called *sacred*.

These late thoughts of GB also supplement and complement GB's earlier theory of the *double bind* (cf. Bateson 2000, p. 201). In the observation of the communication of schizophrenic people, there were observed contradicting messages in communication and metacommunication, consisting also in a interdiction to talk about the suffered contradictions. But here, again in regarding some core processes of the human communication and relationships, it is just the other way round. Not talking is sometimes better, because talking about it would alter the situation in a not desired way.

Summary

This entry has approached ideas of the anthropologist Gregory Bateson related to the possible. Following the title of one of his major publications, *Steps to an Ecology of Mind*, this was presented in 10 steps. These steps also reveal a *systemic approach* to the possible. So, all in all, they constitute an eleventh step since GB is one of the most influential thinkers of a systemic worldview. In this understanding, the discussion about possible was enhanced and enriched by the "not possible," the "also possible," and even the "desirable."

Cross-References

- [Abduction](#)
- [Emergentism](#)

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The Possible in the Life and Work of Henri Bergson

Steven D. Brown¹ and Craig Lundy²

¹Nottingham Trent University, Nottingham, UK

²London Metropolitan University, London, UK

Abstract

Henri Bergson (1859–1941) contributed major philosophical works on time, consciousness, evolution, and morality. His thinking remains central to debates on fundamental issues within philosophy and social science, particular around “process ontology.” Bergson’s work was of enormous influence to early-twentieth-century social science, and has seen a resurgence in the twenty-first century. This is in part due to the reception of Gilles Deleuze’s work, which engaged extensively with Bergson. In this entry, we focus on Bergson’s treatment of the relationship between “the possible” and “the real.” Bergson inverts the Platonic organization of these terms, where the real is constituted by the selection of ideal forms of possible. Bergson argues that this makes it impossible to understand how “unforseeable novelty” might emerge in the world. The possible is instead a “mirage” retrospectively posited as prior to

the real. This treatment is part of a broader project of overcoming metaphysical mistakes which consist in seeing one philosophical term as adding fullness and positivity to another. In its place, Bergson offers an account of life as dynamic, autopoietic emergence. In the final part of the entry we describe how an engagement with Bergson can afford social science approaches to memory, imagination, and lived experience as emergent patternings of life responding to life.

Keywords

Virtual · Duration · Lived Experience · Vitalism · Memory

Introduction

Henri Bergson (1859–1941) was arguably the preeminent French philosopher of the early twentieth century. Beginning with *Time and Free Will* (1889 [2001]), Bergson worked extensively on a philosophical treatment of time that sought to decouple it from a confused notion of spatiality. This project led Bergson toward important contributions in rethinking fundamental questions of consciousness, perception, and representation. For example, *Matter and Memory* (1896 [1991]) offers a bold account of experience from the perspective of duration – Bergson’s nonspatial conception of time. Here the notion that consciousness presides over and elaborates representations of reality is demonstrated to be an illusion that masks the dynamic way in which experience is an emergent property of a distributed network of components that includes brains, bodies, and worldly materials. By *Creative Evolution* (1907 [1998]), Bergson had firmly placed psychological questions within a broader ontology centered around the *élan vital*, the creative unfolding of life through its myriad actualized forms. His final work *The Two Sources of Morality and Religion* (1935 [1977]) provided a long-promised contribution to moral philosophy which linked the development of human relations to a broader process ontology of intersecting open and closed systems.

The breadth and significance of his work was widely acknowledged within his lifetime. William James engaged deeply with his work, and the reciprocal influences between these two thinkers of “radical empiricism” are clear (see James 1909; Bergson 1992, 2002). From 1900, Bergson held the prestigious chair in ancient philosophy at the Collège de France, before transferring to the chair of modern philosophy in 1904. His public lectures at the Collège were “must-see” events for both intellectuals and fashionable high society (see Lundy 2018: 2). When Bergson visited the University of Oxford in 1911 and Columbia University, New York, in 1913 there was widely reported talk of a “Bergson craze” and “the Bergson Cult” (McGrath 2013). Given this, it is not surprising that Bergson’s influence is to be found not only within philosophy, but also upon the majority of the major thinkers in psychology and other social sciences of the time. Jean Piaget, for instance, experienced reading Bergson as a “profound revelation” that knowledge and morality were immanent to life itself (Vidal 1994). Although politically and institutionally often opposed, Émile Durkheim’s work shares many of Bergson’s concerns to overcome the imprecision of conceptual analysis and with placing epistemological questions within an immanent account of the emergence of sociality (Lefebvre and White 2010). Famously, Maurice Halbwachs’ (1980, 1992) groundbreaking work on collective memory was an attempt to navigate a course between the intellectual poles of Bergsonism and Durkheimian sociology.

Yet Bergson’s influence was to wane. By the middle of the century, Bergson’s work had fallen out of favor, with his actual works often dismissed by drawing upon the caricatured ideas of popularized Bergsonism (Lundy 2018). In part, this is because many of Bergson’s claims – such as the idea of “retroactive possibility” – are highly obscure when considered outside of the complex weave of his thinking. This has led to the unfortunate situation where those of Bergson’s contemporaries and successors whose ideas were in dialogue with his own have become similarly misunderstood. For example, Mary Douglas’ introduction to the English version of Halbwachs’

La Mémoire collective (1950 [1980]) claims that the work is entirely in opposition to Bergson despite Halbwachs' account of experience as a resonance between group members whose intelligibility relies substantively on Bergsonian notions of multiplicity and overlapping durations (see Middleton and Brown 2005).

The late twentieth century was marked with a surprising resurgence of interest in Bergson. This was largely driven by the work of Gilles Deleuze, who wrote and thought extensively with Bergson, principally in the monograph *Bergsonism* (1966 [1991]) and the two volumes of *Cinema* (1983 [1986]; 1985 [1989]). More broadly, several of the most significant concepts and themes in Deleuze's philosophy can be traced back to his engagement with Bergson, including the virtual/actual and multiplicity (Lundy 2018), which has in turn compelled scholars working on and with Deleuze to rediscover Bergson. While it is common for Bergsonians to remark that Deleuze's reading of Bergson is unorthodox if not unfaithful (see Gunter 2009), there is no denying that this conduit has led to a renaissance of engagement with Bergson's philosophy. In so doing, Bergson has come to be recognized as occupying a pivotal place within what can be loosely called "process thought" – a category that typically includes thinkers such as Alfred North Whitehead, William James, Gilbert Simondon, Isabelle Stengers, and Deleuze himself.

Many of the conceptual challenges of understanding Bergson's unique vision around themes such as possibility, creativity, intuition, and memory become far more tractable within a "process ontology" of emergence, multiplicity, and distribution. For example, much of the confusion around Bergson's so-called "psychologism" arises from confusion around how he uses the term "intuition." This is usually understood as a form of knowing that arises within the individual, based on prior experience rather than formal knowledge. But Bergson neither treats consciousness as synonymous with a self-contained psychological subject, nor restricts experience to a purely psychological or individualistic usage. Intuition is primarily a form of relationality within duration itself, rather than between clearly defined subjects

and objects. Similarly, Bergson's notion of memory cannot be apportioned between the terms "individual" or "collective" but is better understood in process terms as the dynamic reinvention of the past in present action that momentarily actualizes or recreates relations between "subjects" and "objects" in the course of its emergence.

Bergson on "The Possible" and "The Real"

To understand Bergson's treatment of the possible, it is first necessary to engage with the broader metaphysical arguments at work in his philosophy, in particular the relationship between "the possible" and "the real." The notion of the possible plays an enormously important role in shaping experience. It is used by conscious actors on a regular basis to navigate and make sense of reality, from the mundane planning of daily activities to our more grandiose reflections on the future and the past, both personal and collective. But what is the nature of the possible and possibilities, and how does this differ from that which has been "realized"?

It is commonplace to think of the possible and possibilities in a Platonic fashion, whereby the various possibilities of what could occur (or might have) exist in an "ideal form," some of which will be (or were) selected. In contrast to this orthodoxy, Henri Bergson claims that the possible is merely "the mirage of the present in the past" (1992: 101). Given that this comment goes against the "common sense" understanding of the possible, accepting Bergson's position will be immensely challenging; but if he is correct then major implications ensue for how we conceive of life and reality – implications that could impact not only our cosmological understanding but also everyday existence.

In 1920 Bergson delivered a lecture at Oxford titled "The Possible and the Real." As he notes at the beginning of this lecture, Bergson's thoughts on the possible are a by-product of his other investigations on the nature of time, freedom, action, and creativity. The shared concern of

these other studies is stated by Bergson as follows: “the continuous creation of unforeseeable novelty which seems to be going on in the universe” (1992: 91). Put in simple terms, Bergson is of the view that the future is open and cannot be reduced to what currently exists. Moreover, the movement of reality is one of “global and undivided growth, progressive invention, duration: it resembles a gradually expanding rubber balloon assuming at each moment unexpected forms” (1992: 96).¹ As this image suggests, reality and its experience does not involve charting a path through a multitude of ideal options that are sequentially selected. Instead, reality *unfurls* itself in time and space. When this happens, it is not as if the universe increasingly fills up an absolute vacuum, for there is no void beyond the universe that predates its reality. In the same way, presuming that possibilities predate their realization would involve postulating a metaphysical framework in which “all is given” and time does nothing, since the future on such a schema essentially becomes nothing more than a complicated combination of what currently exists. An epistemology that assumes the preexistence of ideal possibilities is thus incompatible with a metaphysics that allows for genuine change and the emergence of the new.

To flesh out this point Bergson recounts a conversation in which he was asked to predict the future possible direction of literature. It is mistaken, he says in response, to conceive of future works “as being already stored up in some

cupboard reserved for possibles” (1992: 100). Instead, “the work of which you speak is not yet possible. [...] I grant you, at most, that it *will have been possible*,” for it is only once the work of art has been created that it is real, “and by that very fact it becomes retrospectively or retroactively possible” (1992: 100). Bergson is quick to qualify here that he is not advocating a theory of reverse causality, in which the present ontologically produces the past; it is the possible that is placed in the past, not the real. Possibility, therefore, does not precede reality, if one means by this that the possible exists prior to the real. Rather, something becomes possible only once it is real, but when this occurs the possible is retrospectively posited as being prior to the real, so that the possible “will have preceded [the real] once the reality has appeared” (1992: 101).

We can now start to see how the possible for Bergson is a “trick of the mind,” an epistemological illusion derived from a false metaphysics. When something occurs, it is natural for the intellect to surmise that it was possible for that thing to occur before it indeed occurred. However, just because the possible is retrospectively posited by the mind as preceding the real does not mean that possibilities *prospectively* preexist a reality that will come to be (or not). When something occurs, we know for a fact that it was possible to occur. But it does not follow from this that we can know what might possibly occur in the future. Between these two configurations are two different senses or kinds of possibility. In the first case, “possible” is said in the sense that “there was no insurmountable obstacle to its realisation” – i.e., it was not impossible – and “this non-impossibility of a thing is the condition of its realisation” (1992: 102). This “negative” sense of possibility, however, is quite distinct from the more “positive” sense in which the form of possibilities are ideally preexistent: “If you close the gate you know no one will cross the road; it does not follow that you can predict who will cross when you open it” (1992: 102).

As this quote indicates, Bergson’s critique of the possible is more exactly a critique of the “positive” sense of the possible that is commonly employed, whereby one imagines various ideal

¹ See also the opening of *Creative Evolution*, where Bergson says: [T]here is no feeling, no idea, no volition which is not undergoing change every moment: if a mental state ceased to vary, its duration would cease to flow. Let us take the most stable of internal states, the visual perception of a motionless external object. The object may remain the same, I may look at it from the same side, at the same angle, in the same light; nevertheless the vision I now have of it differs from that which I have just had, even if only because the one is an instant older than the other. My memory is there, which conveys something of the past into the present. My mental state, as it advances on the road of time, is continually swelling with the duration which it accumulates: it goes on increasing – rolling upon itself, as a snowball on the snow. [...] The truth is that we change without ceasing, and that the state itself is nothing but change. (1998: 1–2)

forms of reality before they become reality (or fail to). His claim is that such images are reflections of the real, of the reality that already exists, just as the image of a person in the mirror is a reflection of a real person, not a possible one lacking reality. The “positive” notion of the possible supposes that there are various distinct options laid out before us, like hollowed outlines, one or some of which will “become reality by the addition of something, by some transfusion of blood or life” (1992: 101). But this manner of thinking is wrong-headed – or to be more precise, it involves a confusion of the “more” with the “less.” Contrary to the suggestion that the real is the possible with existence or being added to it, Bergson contends that there is more in the possible than in the real. In his words:

[T]he possible implies the corresponding reality with, moreover, something added, since the possible is the combined effect of reality once it has appeared and of a condition which throws it back in time. The idea immanent in most philosophies and natural to the human mind, of possibles which would be realised by an acquisition of existence, is therefore pure illusion. One might as well claim that the man in flesh and blood comes from the materialization of his image seen in the mirror, because in that real man is everything found in this virtual image with, in addition, the solidity which makes it possible to touch it. But the truth is that more is needed here to obtain the virtual than is necessary for the real, more for the image of the man than for the man himself, for the image of the man will not be portrayed if the man is not first produced, and in addition one has to have the mirror. (1992: 101–102)

The confusion of the more and the less, as it turns out, lies at the heart of several other metaphysical mistakes identified by Bergson. It would appear obvious to many that there is *less* in nothing than something, *less* in disorder than order, but Bergson argues that the converse is the case: “there is more intellectual content in the ideas of disorder and nothingness when they represent something than in those of order and existence, because they imply several orders, several existences and, in addition, a play of wit which unconsciously juggles with them” (1992: 99). If it is often assumed that there is more in something than nothing – more in order than disorder, and more in the real than the possible – it is because we have a

tendency to start in the wrong place. If one starts with nothing, or with nonbeing, then it would seem self-evident that a thing or being is more than nothing or nonbeing. A simple glance at these words written down on paper, however, alerts us to Bergson’s point: the word “nonbeing” is based on the word “being,” it is “being” with three letters tacked on the front, just as “nothing” is “thing” + “no.” What this indicates is that nothingness and nonbeing, as with disorder and the possible, are all predicated on something, some being, order, or reality. There is thus more in nonbeing than being, more in nothingness than existence, and more in the possible than the real, for in each case the former relies on the latter, along with the idea of negation and the mind that abstractly posits it. The real, in short, comes first, and if there is such a thing as possibility, “it is the real which makes itself possible, and not the possible which becomes real” (1992: 104).

A Bergsonian Social Science of the Possible?

In the televised dramatization of M.R James’ short ghost story *Whistle and I’ll come to you, my lad* by Jonathan Miller, the central character, Parkin, a Cambridge professor vacationing at a seaside guest house, is challenged by another guest to apply his philosophy to explain the supernatural with the rhetorical statement “But there are more things in heaven and earth than in your philosophy.” With some amusement, Parkin replies “I would prefer to put it a different way – there are more things in philosophy than are dreamt of in heaven and earth.” Parkin might be seen as a caricature of a philosopher such as Bergson who develops a complex and convoluted metaphysics to explain the nature of existence. But this belies the extent to which Bergson is, above all else, a philosopher who is attuned to “lived experience.” For Bergson, philosophy must follow the contours of life in its emergence. We must not be forced to make the choice into which Parkin is lured between the focusing on either the actions we take as part of worldly engagements or the philosophical discourse in which they are to be

understood. Rather philosophy must be cut from the cloth of living, lest its concepts become akin to a “pile” of “ready-made garments” which are placed on life (Bergson 1992: 175). Bergson’s account of possibility is a systematic attempt to understand lived experience as an emerging, self-organizing pattern which is not determined by preexisting possibilities, but rather articulates the conditions of its own emergence retroactively in the process of constituting itself. But in so doing, we intuit that the pattern of our unfolding lived experience is accompanied by a virtual image that shows that there are other potential patterns, that the actuality of living creates its own sense of the possible.

The challenge of Bergson’s thinking is to develop an account of social action and psychological life in these terms as emergent patterns rather than the reproduction or realization of pre-existing possibilities. A major obstacle to this is the deeply ingrained tendency within social science to begin with a “substance” account of particular matters in hand. For instance, much social theory remains committed to the idea that there is something like a “generative mechanism” that underpins both social structures and individual agents, which is ultimately responsible for the particular forms that they take. Similarly, psychological theorizing typically relies upon a notion of the subject or self that becomes progressively realized through its actions. But for Bergson, there is no mechanism or “thing” that presides over actions other than the self-generating forms that express the dynamic of the *élan vital*. As he puts it we must grasp that “there is *more* in a movement than in the successive positions attributed to the moving object” (1998: 316) and treat lived experience as rooted in a reality which “no longer appears as finite or infinite, but simply as indefinite. It flows without our being able to say whether it is in a single direction, or even whether it is always and throughout the same river flowing” (1992: 211).

Clearly this raises significant challenges to forms of social science which treat identity and continuity over time as grounded in a substance ontology. The psychology of memory, for example, classically views past and future from the

perspective of a present that consists of the automatic storing of present moments into organized memories, which in turn informs the anticipation of future presents which are in the process of being realized (see Middleton and Brown 2005). While the field has moved on considerably from the “storehouse” model which Bergson so thoroughly critiqued in *Matter and Memory*, it still relies upon some notion of there being an agent, in the form of a set of bounded processes that ultimately map onto patterns of neural activation, which underpin experience. This is yet another instantiation of the idea that life gains its fullness in the present moment, which is harvested from an admixture of realized past possibilities and vague futures hitherto lacking in content. Only the present moment is truly “real.” While the approach seems to overcome the apparent vagueness of the notion of the real as akin to a river which is neither “finite nor indefinite” and never identical to itself, it substitutes for it endless conceptual puzzles, such as the difficulty of defining the limits of the present moment, the point at which the past has been successfully restored (i.e., when memory is recollected) and the future properly arrives (i.e., when imagination becomes reality).

The alternative which Bergson offers is to begin analysis by thinking in terms of time rather than space. Duration, or time as it is lived, is fundamentally indivisible. It is not possible to clearly distinguish the present from the future into which life is becoming, nor the past from which it emerges, in the same way that the listener of a piece of music is not fixated on a particular note or sound, but instead caught up in the passage of the music unfolding. The river example is only confusing when it is thought in terms of defined spatial categories – this section and that section – whereas from the perspective of time, the reality of the river as flowing in ways that are neither entirely determined nor undetermined is clear. Identity comes from the particular manner of its flowing, rather than a homology between different spatially organized parts. The alternative which Bergson provides is to affirm that memory and imagination – the two terms essential to thinking the real and the possible – are fundamentally

temporal categories which require treatment as such rather being confused with space. For instance, it is possible to conceive of variations of speed and rhythm in relation to memory, recollections that emerge slowly or those that appear almost instantaneously, those that routinely punctuate our daily lives versus those arise only irregularly (Brown and Reavey 2015). Similarly, imagination could be considered in terms akin to the “varieties” of experience to which William James referred, where some forms of imagination overlap with or interrupt one another, while other diverge.

Thinking in time overcomes some of the tendencies to bind experience to a particular spatially defined “thing” (e.g., agent, structure, person, and other). The timing of lived experience is never entirely determined by the “subject” of that experience, it is intertwined with and shaped by a multitude of timings. For example, human lived experience is composed of an array of rhythms and cycles including biological (e.g., circadian, nutritive, and respiratory), psychological (e.g., perceptual, affective, and attentional), and social (e.g., clock time, the working day, and age markers), which interact with one another to create complex and often conflicting patterns of temporal flow. Indeed, it is precisely in order to manage these tensions within living time, Bergson argues, that we have learned to objectify time as space. Breaking experience into distinct segments – a process Bergson refers to as the “cinematographic mechanism of thought” – allows for a form of practical mastery over the world. The objectification of nutritive cycles into distinct “meal-times” allows them to be managed in a way not unrelated to the way that the organization of the working day allows for maximum value extraction from labor. Frederic Worms (2017) argues that Bergson’s work demonstrates a tension between the “critical” (the establishing of limits and distinctions) and the “vital” (the emergent patterning of life). Life is not unconstrained, but is always responding to variations formed within and between the actions of living organisms – “life responds to life” (see Brown and Reavey 2019). An analysis of memory and imagination needs to grasp the ways in which lived

experience becomes objectified within its emergence.

Middleton and Brown’s (2005) work develops a social psychological approach to remembering in this way by inverting the problem of memory. They argue that from the perspective of Bergsonian duration, the retention of memories is a non-problem. If duration is indivisible, then the past is never disconnected from the present, it does not “go anywhere.” What instead requires analysis is the ways in which the entirety of the past does not weigh at every moment on current actions. In other words, it is the setting aside or provisional “forgetting” of the past that needs to be understood. While Middleton and Brown’s analysis draws extensively on the Bergson’s account of needs as guiding this selection of memories, they turn to Halbwachs for concepts to describe the “projecting,” “collecting,” and “objectifying” of experience in material forms. In a similar fashion, Stenner’s (2018) work on imagination and fabulation draws heavily upon Bergson’s account in *The Two Sources of Morality and Religion*. The problem, for Stenner, is to understand how liminal experiences, the moments “betwixt and between” distinct phases of psychosocial life, are managed during the process of their transition. To undergo such transition is to find oneself between a past that is in the process of withdrawing and a future that has not yet properly arrived. Transitions are always risky, a potential threat to psychological well-being and social cohesion. Stenner describes how Bergson deals with this issue by splitting the category of imagination into two distinct processes. One is that of “myth-making” or “fabulation,” which involves the creation of “false images” that have such apparent solidity that they create a bridge across the liminal phase. The other is a form of creative “mysticism” that invents new and dynamic images that transform the nature of the division between past and future. This creates a contrast between an active or open form of imagination, and a more passive or closed form. While this enables Stenner to point toward different modes of engaging with liminality, he turns toward Whitehead for a conceptual vocabulary to clarify the ways in which experience is objectified in the dynamic relationship between

these two forms of imagination. The outcome of both of these approaches is that when developing social science applications of “thinking in time,” Bergson’s work is usefully augmented by turning toward other thinkers.

To conclude, the key elements of building upon Bergson’s account of the possible and the real are as follows. Analysis needs to be closely fitted to the forms of lived experience that require understanding. The method to achieve this outcome is thinking from the perspective of time rather than spatiality, and correspondingly, the process of creation rather than what is created. Possibility is treated as retroactively constituted in the process of action rather than the conditions upon which it is realized. There is always “more” in the virtual image than in the actuality which it reflects. Past and future are not divided from present, but are aspects of its emergence, and as such are no less real, although they do not have a causal relationship to current actions. Imagination and memory are two descriptions of the process of intuiting the emergent patterning of lived experience. While lived experience is continuously objectified as part its emergence, this does not halt or divide the process. Rather, experience is itself the perpetual process of creative emergence and self-objectifying as life responds to life.

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The Possible in the Life and Work of Jacques Lacan

Duane Rousselle
Sociology and Psychoanalysis, The School of
Advanced Studies, University of Tyumen,
Ontario, Canada

Abstract

This entry explores the contribution that Jacques Lacan made to the topic of the possible. For Lacan, it is more important to centralize a discussion of the impossible as a mode of

subjective causation. This entry traces a lineage of three periods of thinking the impossible in the work of Jacques Lacan.

Keywords

Jacques Lacan · Psychoanalysis · Impossible · Radical theory · Revolution

Modalities of the Impossible

Graffiti discovered in Paris during the infamous uprisings of 1968 reveal a welcomed slogan for the European revolutionary left: “be realistic, demand the impossible.” The continued popularity of the slogan no doubt results from a counter-intuitive punch: the utopian linkage of impossibility with realism. When these two signifiers – the impossible/impossibility and the real/realism – are brought together, do they not strike a blow against conservative orientations that equate realism only with what is possible? The slogan also laces impossibility with problematic utopian sentiments, thereby betraying the overarching aspiration for change. Revolutionary discourse such as this often finds itself anchored to an imagined model of utopia. The object of such an anchorage, forever out of reach, breeds impossibility. We should juxtapose this position with that of former American democratic presidential candidate, Elizabeth Warren. When John Delaney accused Warren of running on a platform of “impossible promises” (in other words, of participating in a politics of “impossible demands”) she responded: “I don’t understand why anybody goes to all of the trouble of running for president of the United States just to talk about what we really can’t do and shouldn’t fight for” (Biography.com 2019). This statement positioned Warren as a pragmatic voice of reason with respect to the topic of impossibility, or, put another way, at this moment she fully secured for herself a platform of “measured alternatives” to Bernie Sanders.

An interesting taxonomy of the (im)possible presents itself. Whereas the revolutionary sentiments of 1968 appear to us as “impossible impossibilities,” that is, they appear to us as ideals demanded so that they may never be reached,

the political oppositions of the 2019 presidential race demonstrate that sometimes “impossibilities” also become rendered as “possible.” Through her rejection of Delaney’s realism of “possible possibilities” – whereby the focus is on obvious and attainable political goals that remain within the scope of existing political praxis – Warren positioned herself as the pragmatic alternative to Sanders’ apparent platform of “impossible impossibilities” (whereby “impossible impossibilities” exist without any reference to the possible). We have, therefore, the following categories: “impossible impossibilities,” “possible impossibilities,” and “possible possibilities.” Are we not missing the category of the “impossible possibilities?” The domain of “impossible possibilities” pertains to nonutopian perspectives concerned with unearthing prior determinations within any linkage of (im)possibility with realism. Hence, a key political question that those who adhere to “impossible possibilities” might ask follows: “Are we not confined to the basic operations of the overarching political system even (and especially) during our efforts to position ourselves (impossibly) outside of it?”

This is the problem with Todd May’s so-called post-anarchist political philosophy (see May 2005). May positions his argument in the following way: political philosophers cling to one of two poles: (1) reality (the “is,” explored often through metaphysical speculation), or (2) morality positions bordering “utopia” (the “ought,” explored often through normative or meta-ethical argumentation). Post-structural anarchism rejects any hard-headed decision regarding which pathway is best to take and proposes an altogether more troubling solution which consists of situating oneself within the tension between the two. The move shifts attention from grand strategic political gestures (e.g., revolutionary politics) toward tactical engagements across a variety of scales and nodes. We should repurpose the logical critique made in another context by Margaret Archer (2008): central conflation occurs when thinkers either consolidate or else avoid altogether problematic binaries by concealing the inherent and incessant rupture or division which precisely defines that binary. Thus, when we believe that a binary is at play

what we are actually witnessing is not a polarity (e.g., of “structure” and “agency” or of “reality” and “utopia”) but rather a rupture between the one and its limitation or excess (see Žizek 2019). May’s apparent even-handedness therefore conceals the fact that the “is” exists precisely as the incompleteness of the “ought,” or, put another way, the “ought” contains within itself a fundamental and irreconcilable kernel of trauma.

The point is not to side-step the problem of the binary – which is what all aforementioned discourses on impossibility intend to do – but it is rather to find what within reality compels the subject toward the “ought” in the first place. If the “ought” exists with a fundamental limitation then so too does the “is,” since it is from the impossibility of the real that any utopian possibilities emerge. The ethical project of psychoanalysis is to articulate and explore the scope of the subject’s compulsion toward truth via the urgency of these prior impossible determinations. If speech occurs within the context of a prior determination, then this is because it is an action situated within an overarching discourse. Our task as psychoanalysts is to inquire into the situatedness of the subject in relation to the various determinations resulting from permutations of a master discourse (whether that discourse be traditional, whereby the subject puts him or herself into the position of producing knowledge out of the non-sensical utterances of a master, or it is the latest capitalist mutation, whereby the subject suffers from direct engagements with *jouissance*). It is well known that a master discourse defines the basic contours of political expression (and that this in some way is the prevailing understanding of what is meant by ideology). As such, the subject is always split by this discourse which determines and compels him, split, that is, between what Lacan named the “subject of the statement” (e.g., what the subject intended to express as the content of some information or knowledge) and the “subject of enunciation” (e.g., the unconscious truth, revealed through distorted speech). We should go a step further: the master discourse defines not only the possible but also more cunningly the very space of impossibility. Rendered into Lacanian language we might claim that the subject remains trapped by a

master signifier, which defines the scope of his fundamental fantasy (utopia), but without that primary signifier a far worse future awaits (e.g., the death of subjectivity). To traverse the fundamental fantasy involves not only the destruction of that orienting signifier but also more essentially the reinvention of the entire symbolic universe along with its space of impossibility.

Instead of retreating into the space of political fantasy and the realism of pragmatic possibilities whereby the impossible becomes rendered through the prism of prevailing politics, Warren could have agreed with Delaney’s characterization of her political agenda. Moreover, she could have rebutted by articulating the fact that Delaney’s “possible possibilities” are determined by prior “impossible possibilities.” Incidentally, is it not the case that all three of the concepts (possible possibilities, impossible impossibilities, and possible impossibilities) are determined first of all by impossible possibilities? All positions are grounded upon fundamental impossibilities – recall that Freud described politics itself as one of the impossible professions – and are determined by the necessity of forming possibilities out of systemic limitations. The problem with all discourses of possibility – especially of possible possibilities – is that they neglect entirely the domain of impossibility. Similarly, the problem with discourses of possible impossibilities is that they flee from the anxiety of any direct confrontation with the impossible by seeking temporary refuge in prior comforts. Finally, the problem with impossible impossibilities is that they elevate impossibility to an ideal and thereby produce failure as the only goal.

If “possible impossibilities” seek comfort in prior political positions, then “impossible impossibilities” seek comfort by restricting self-responsibility for any possibility. The latter seek disengagement and appear to us like the critic who so easily dismisses the work of others but resists ever proposing something that another person will also critique. Take Anton Ego’s final statement of self-criticism in the animated movie *Ratatouille*:

In many ways, the work of a critic is easy. We risk very little, yet enjoy a position over those who offer up their work and their selves to our judgment. We

thrive on negative criticism, which is fun to write and to read. But the bitter truth we critics must face is that in the grand scheme of things, the average piece of junk is probably more meaningful than our criticism designating itself so. But there are times when a critic truly risks something, and that is in the discovery and defence of the new. The world is often unkind to new talent, new creations.

We should be very careful here: Anton Ego was not blindly celebrating the new as the product of a self-conscious inventor. Rather, in the next few sentences he celebrates the work of Linguini, who, through his subtle invention, reintroduces the importance of a traditional “peasant” dish, linguini. In this case, the new is linked with realism and impossibility through the assertion and exposition of prior determinations as such. Linguini is the dish of the humble, and it is described by the critic as if it were a “low class” food. Yet, the food, which was previously ignored by the prevailing culinary arts establishment, was forced into a context which was not prepared to accept it. In light of this, we should ask ourselves the following: If the problematic discourses on (im)possibility are to be avoided, what is the alternative?

The revolutionary slogan of 1968 elevates impossibility to an unreachable ideal, Warren’s position degrades impossibility by rendering it once again through the prism of pragmatic possibilities, but Sanders’ position of supposed “impossible impossibilities” is also constantly degraded into “possible impossibilities” by way of its situatedness within the existing political apparatus. Bernie must nonetheless appeal to existing political infrastructure in order to discuss his brand of socialism. What he offers is a dangerous transformation of the Marxist political project: by subjecting the revolutionary aspiration to populist attitudes and electoral democratic legitimization, does he not, from the standpoint of the future, demonstrate that even socialism is possible within the existing democratic capitalist framework? It is useful to reiterate Alain Badiou’s distinction between “democratic materialism” and “materialist dialectic”: whereas the first proposes that every possibility exists within the political apparatus and that those which do not can nonetheless be made to conform, the latter proposes that there is something – truth – which is

fundamentally and stubbornly “impossible.” Thus, we should be prepared to admit that Warren’s platform is the natural outcome of the eventual structural position of Sanders.

As for the revolutionary slogan, there is the problem that Lacan sought to address during his visit to the revolutionary students of France: “as revolutionaries, what you aspire to is a master . . . you will have one!” (Lacan 2007, p. 237). Lacan revealed how the linkage of impossibility with realism produces a more deceptive (and therefore more insidious) perpetuation of the discourse of mastery. The warning he issued to subjects of revolutionary discourse was that all discourses of (im)possibility have within them a hole. Or, to put it in more technical terms, he exposed the “inexistence of the Other.” Yet, the inexistence of the Other does not at all keep the discourse from supplying the subject with the very frame of impossibility. Ideological discourse does not consist in propagating the terms of possibility, then, because the move is much more radical: the discourse of mastery produces the very space of impossibility, without which the revolutionary slogan remains impotent. Any attempt to hold the master to account only demonstrates all the more the dependency of impossibility on discourse such that the hysterical political subject becomes trapped within a fundamental deadlock. It follows that all possibilities, pragmatic or otherwise, exist as the content of any political strategy within the overarching impossibility which gives politics its true mandate. What we name “political strategy” is therefore nothing more than an attempt to outrun this “hole,” to fill it in with fresh possibilities. Or, put another way, political strategy is the name we give for any subjective escape from the dupery of politics (“there are no honest politicians!”) since, as Lacan claimed, the non-dupe always errs.

The very term revolution implies already that political strategy is always a sort of algebra of the slave. Indeed, Lacan claimed that any revolution is only a counterclockwise turn of the master discourse. The ingenuity of the discourse is precisely to keep itself from offering “impossible” solutions, utopian answers, so that the subject will continue to request them. If these impossible

solutions were fully articulated, the discourse would cease to function. Therefore, paradoxically, it is because of the inexistence of the Other that his or her power remains all the more secured. Lacan made a radical move here by insisting that psychoanalytic discourse provides the only counterpoint to discourses of mastery because it alone engages the latent and determinative dimension of discourse, and it alone reveals the inexistence of the Other along with the fact that we cannot escape being a dupe. At some point it becomes obvious that the latent dimension of discourse is split between symbolic determinations (e.g., the hidden ideological content, such as those described methodologically by Roland Barthes in his “cultural semiology” or “second order sign system”) and a real traumatic hole (which never ceases to interrupt meaning). There is at this level only “something,” that is, the signifier, and “nothing,” that is, *jouissance* as such, and at the convergence of something with nothing there is a radical impossibility of relation.

The revolutionary slogan remains quite far removed from analytic discourse in that it avoids this substratum of political impossibility. Instead, the slogan affirms an imperative of demand: “. . . demand the impossible!” It cannot speak of the possible as an emergent and necessary property of the impossible because it has as its point of departure the demand to avoid the possible to the greatest extent possible, and to avoid, therefore, the possibility that one is all the more determined by those various possibilities. It cannot (and will not) recognize that the linkage of realism with impossibility is a product of the discourse of mastery and that it affirms the existence of the Other. Indeed, the very form through which any demand is articulated demonstrates all the more a discursive dependence upon the Other, and it elevates or centralizes the Other as a lynchpin of discourse which secures the possibility of there being “impossible impossibilities.” Thus, we might claim that all discourses are discourses of utopia, since utopia is the idealized or imaginary non-place, or what Lacan referred to as *objet petit a* as semblant. Put differently, adherents of the revolutionary slogan are not at all prepared to admit the inexistence of the Other, and so they go on

issuing demands precisely to convince themselves of mastery.

But there is another interesting remark to be made about the impossibility of utopia. Within the anarchist political tradition, the word utopia was often a bad word. For example, Larry Gambone argued that Petr Kropotkin and Pierre-Joseph Proudhon were against utopia because it projected an ideal and hence restricted personal liberty. But wouldn't the more interesting reading be precisely the opposite? What if Kropotkin was against utopia not because it was “too violent” of an ideal but rather because it was not violent enough? The problem with revolutionary anarchism in this case would be that it avoids the altogether more troubling possibility that utopia proposes a version of impossibility which can still be rendered comforting within our imagination. Hence, it misses the true impossibility: that human political communities are defined by what Georges Bataille named the principle of heterogeneity or “general economy”: an inescapable violence that overflows into the life world of humanity. In other words, utopia misses the dimension of the Lacanian death drive as that which pushes forth with or without the articulations of political strategists.

There is therefore a problem of death drive alongside a problem of demand. It was the Canadian sociologist Richard J. F. Day who demonstrated this problematic logic of demand among the revolutionary (mostly anarchist) left very well when he argued that the “new social movements” erect a discourse of demand such that the Other (e.g., the governmental State) is presupposed as the recipient of that demand. The problem for Day was that he affirmed, in place of the politics of demand, an altogether more troubling and idealized “politics of affinity.” I have argued elsewhere that this logic avoids the difficult and violent work of revolutionary politics in favor of a long waiting game (see Rousselle 2017). They missed Rosa Luxemburg's important point: if we wait for the appropriate revolutionary moment, we will forever miss the appropriate revolutionary moment. In any case, the Other exists in anticipation of any response to a demand, and political strategy exists to describe the content of any such demand but not

the fact of demand as a form of prior subjective determination. In this way, the Other's structuring influence becomes repetitively secured. One must therefore avoid the following three modalities of (im)possibility: (1) utopian/hysterical revolutionary haste ("impossible impossibilities"), (2) liberal pragmatism ("possible impossibilities"), and (3) conservative orientations which accept only existing possibilities ("possible possibilities"). The analytic discourse teases out the fourth domain of "impossible possibilities" as the domain of prior determinations and retroactive political causation as the only exit from the discourse of mastery.

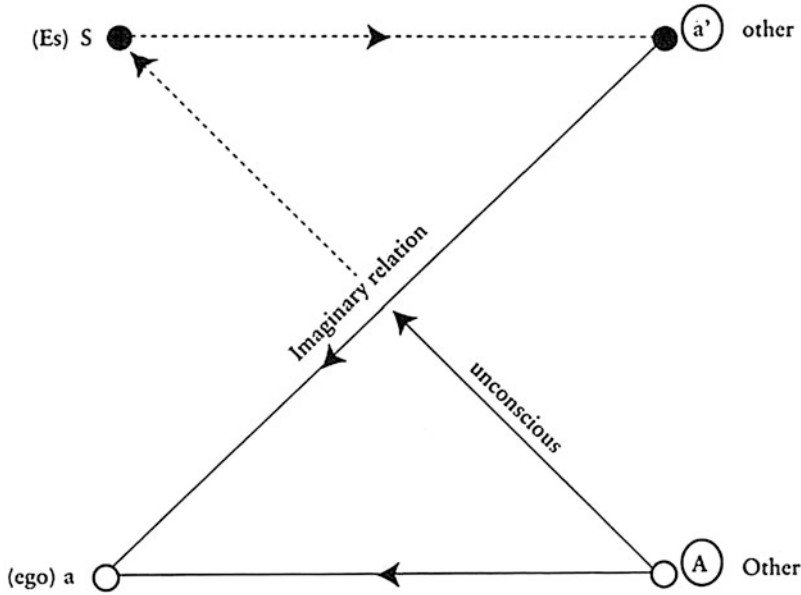
Real Impossibilities

Three moments are worth highlighting in Lacan's teaching on the impossible. First, there is the "early period" of the 1950–1960s which was marked by a movement toward the discovery of the real as a failure or glitch in the processes of imaginary identification. Multiplicities, in the form of the fragmented body ("organs without a body"), threaten any imaginary coherence of the subject's self-image. The second "middle period" of the 1960–1970s exemplified a logical articulation of the real, particularly through the Aristotelian categories of *automaton* and *tuche*. Lacan's most noted students (the circle surrounding Jacques-Alain Miller and Yves Duroux) were busy exploring the real within the what they named "logician's logic." The logician in question was Gottlob Frege, and the logic discussed in his *Foundations of Arithmetic*. During this period Lacan explored the limits of repetition as "real," and, derived the following axiom: the real is that which resists symbolic repetition, absolutely. In the final "late period" of the 1970–1980s, the real was situated as "that which never ceases to not be written." Each period explored the real in relation to another order: first, imaginary; second, symbolic; and, third, real. The first period discovered the real in the fragmented image, the second period located a space of the real that exists in some relation to the installation of a primary symbolic element (what Lacan named the "Name/No

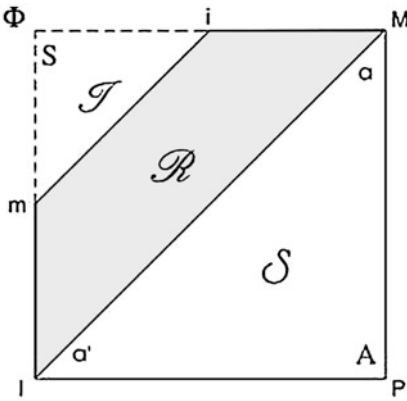
of the Father"), and the final period centralized the experience of the real in relation to the jouissance of the drives (Scheme 1).

Put another way, the final period introduced "impossibility" as a mode of stabilization for a subject immersed in jouissance. The impossibility is grounded fundamentally in a non-sensical symptom Lacan named the *sinthome*. But we should return for a moment to the first period, when there was an awareness of the imaginary as an obstacle to any revelation of symbolic unconscious truth. We see this most clearly in the "L Schema," which demonstrates two fundamental axes: on the one hand, there is the imaginary axis of transferences, which occludes the second latent symbolic axis of unconscious truth (see "L Schema" above). After the seminar of the "L Schema," there is its adaptation into an "R Schema" (see "R Schema" below). The latter delimited the real by producing what appears to be a topological surface (rather than a "flat" flow chart). Nowhere is Lacan's "return to Freud" more apparent than during this period: the classical Freudian unconscious as a written surface to be deciphered by the analyst remains fundamentally intact. A wonderful formulation suddenly appears: the real is "impossible." Toward the end of this period the real obtains the status of that which resists symbolization (Lacan 1991, p. 66). All discourses and aesthetic regimes must contend with radical impossibility. Lacan was therefore not a utopian dreamer of the "possible" but rather a thinker in confrontation with the real as impossible (Scheme 2).

In Lacan's 11th seminar, *The Four Fundamental Concepts of Psychoanalysis*, there are further developments to this conception of the real. A classical opposition, extracted from Aristotle, between *automaton* and *tuche*, was explored. The category of *tuche* was related to the concept of the real as an impossibility inherent to the repetition *automaton*. But *tuche* is not itself another concept for the real but is rather the subject's "encounter with the real" (Lacan 1998 [1964], p. 52). This thereby demonstrates the centrality of the subject vis-à-vis impossibility. The subject encounters impossibility through an interaction with the *objet petit a*, that elusive object



The Possible in the Life and Work of Jacques Lacan, Scheme 1 Lacan's "L Schema"



The Possible in the Life and Work of Jacques Lacan, Scheme 2 Lacan's "R Schema"

cause of his desire, which, because it is a lost cause, appears to him as a semblance. Any encounter with the real occurs beyond the network of signifiers, beyond meaning and imagination, beyond comprehension. It is only here that the subject's relationship to his or her cause is discovered (ibid., 54). Traditionally, the network of master signifiers reveals itself through the difficult work of analytic work with the symbolic unconscious (the unconscious is believed here to be

made up of "symbolic stuff"). No wonder Lacan often claimed that the unconscious was structured like a language (although in his "late teaching" he clarified that this does not mean that it is structured "by" language).

It would seem that Lacan's understanding of the unconscious underwent a transition or a shift of emphasis. Whereas the unconscious was once reducible in some sense to its various symbolic inscriptions, the real as impossible was eventually thought to exist as a primordial and inescapable wound. Transference is a repetition only because it is a problematic attempt to escape the traumatic wound of subjective impossibility. Hence, there are at least two repetitions: on the one hand, there is a pathological repetition revealed through the transferences, and, on the other hand, there is the repetition of the drives always returning to their place within the real. Following Lacan, we should characterize *tuche* as trauma: "[t]he function of *tuche*, of the real as encounter [. . .] first presented itself in the history of psychoanalysis in a form that was in itself already enough to arouse our attention, that of trauma" (ibid., 55). An encounter with trauma, though, is not itself the thing of trauma: it is the opening up of a traumatic space within the imaginary and symbolic world of the

subject. It is an opening of oneself to the traumatic space that was already troubling the subject anyway, a widening of that space within the symbolic and imaginary coordinates of the subject's everyday life.

A similar logic occurred in Freud's work when he constructed the apparent opposition of the reality and pleasure principles. There was thought to be something "unassimilable," indeed something traumatic, at the heart of this oppositional pair. During the interplay of pleasure and reality something of the pleasure is endlessly preserved, and this something is the inescapable trauma of being itself. The subject secures for itself a place within the repetition of the symbolic chain. Lacan's words resonate (I am tempted even to suggest that they are "triggering"): "the trauma reappears, in effect, frequently unveiled" (ibid., 55). The reality principle is responsible for retaining this encounter with trauma by preserving some degree of pleasure for the subject: "let us conclude that the reality system, however far it is developed, leaves an essential part of what belongs to the real prisoner in the toils of the pleasure principle" (ibid., 55). Hence, we are not only subjects within the so-called prison-house of language but we are also prisoners of enjoyment and *jouissance*. Our encounter with *jouissance* imprisons us within impossibility. The reality principle – which, for Lacan, was really only a "delayed action pleasure principle," and thus an extension of *jouissance* folded back upon itself in self-preservation (therefore effectively withholding excitation) – effectively places the subject within traumatic impossibilities as a form or repetition which never ceases to not be properly symbolized within the system of human comprehension.

At this point we reach a problem. Although there are two levels of repetition – first there is the pathological repetition of the symptom or the manifestation of imaginary and symbolic unconscious material, second there is the circular repetition of the drives eluding symbolization – then *automaton* must be related to the former while *tuche* must be related to the latter. Whereas *automaton* is related to the symbolic unconscious, that is, to the latent and manifest dream-

work, there is also within the dream-work an undecipherable impossibility encountered as what Freud named the dream's "navel." Similarly, at some point during the work of analytic interpretation, there appears to be an unsurpassable "hard rock of castration anxiety": something completely eludes symbolization, absolutely. This radical kernel of nonsensical "stuff" punctures a hole in the signifying material, giving rise to a "hole in meaning." Yet this "hole" should also be understood as that which urgently gives rise to meaning. In other words, this "hole" also pushes the subject toward meaning as his only partial exit from the overwhelming world of *jouissance*.

We cannot do otherwise but experience this *tuche*, this encounter with *jouissance*, as "something missing" as a "missed encounter" (ibid., 54) since there is no symbolic or imaginary framework capable of absorbing it. The cause of any future or current possibilities is related to this primordial and fundamental impossibility of the "hole" such that necessity arises as a consequence of impossibility. Put differently, it is necessary that something stand in place of the traumatic *jouissance*, and it is necessary that the subject discover – whether through the introjection of a primary signifier or else through the invention of a sign or code – a substitute for the trauma. Thus, it is not only that our symptomatic pathologies are derived from unsymbolized or hitherto repressed determinations but rather that all of our pathologies are attempts also to cure ourselves of the traumatic hole. Those fixated on "impossible impossibilities" therefore attempt to bring into existence that which already anyway exists, and the "impossible possibilities" are merely the ongoing operations of the subject existing as a consequence of trauma. We might even claim that the subject is him or herself nothing but the object of this trauma. The real is a cause which therefore "does not stop not writing itself" since it endlessly preserves its place as a potential trauma within any signifying chain even while giving rise to that very chain (Lacan, XX: 50).

There was a point of connection to the final teaching of Lacan when, during his 19th seminar, he discussed a surface with the following

important vertices: necessity/existence, undecidability/impossibility, possibility/contradiction, and object/contingency. I cannot explore all of these vertices in detail, but I would like to comment upon one or two of them. First of all, each position is related to the speaking-being's place within discourse such that there is a struggle by each with the impossibility of there being any sexual relationship. Ultimately, the sexual relationship is the key site of impossibility. Yet, to be clear, it is not the impossibility of the relationship between one sex and the other – between the one and its excess or limitation – but rather the impossibility of one sex to fully and harmoniously account for itself. In this conception, impossibility/undecidability is related to the Lacanian statement on feminine sexuation that “there does not exist one who is not submitted to symbolic castration.” This statement serves as the counterpoint to the more popular one that “not all women are submitted to symbolic castration.” Does this not imply that the very concept of impossibility is tied essentially to femininity? The condition for any man to position himself within the impossible is to become feminized in some manner.

Is this not why love is one of the most important names we have for the linkage of realism with impossibility? Take, for example, Jacques-Alain Miller's statement “[any] dialogue from one sex to the other is impossible, as Lacan said with a sigh. People in love are in fact condemned to go on learning the other's language indefinitely, groping around, seeking out the keys – keys that are always revocable. Love is a labyrinth of misunderstandings whose way out doesn't exist” (Miller 2013). At the same time, we should be prepared to admit that is also the pleasure of love! Those in love situate themselves there within its impossible jouissance through feminization. Miller continued: “[love] is essentially feminine. One only really loves from a feminine position. Loving feminizes. That's why love is always a bit comical in a man” (ibid.). The formula of feminine sexuation begins with “there does not exist . . .” which indicates the radical externality of love's possibility since these are experiences that are not reducible to language or identity. We must be very careful in presuming that this secures for woman a

place outside of any homogenous identity, since, as Slavoj Žižek correctly argued, the fact that there does not exist a woman who is not subjected to castration implies all the more that woman is implicated in the quest to “try out” various identities (Žižek 2005). Put another way, inexistence only compels the subject all the more toward masquerade.

One the other hand, possibility is related to the masculine position (but only on the condition of its contradiction). The masculine statement of sexuation begins with “all men are implicated in symbolic castration,” that is, are walking contradictions. We might claim that possibility itself is determined by the impossible, which is why we position the latter in the space of the adjective and the former in the space of the noun: “impossible possibilities.” It is only through the logic of inexistence – the inexistence of the Other who is not subjected to castration – that impossibility as cause arises as the feminine basis through which trauma repeats itself. No wonder Lacan placed the impossible at center stage as that which sustains the possible. Indeed, the Lacanian discovery has no other meaning than this one. Jacques-Alain Miller, during the conference in Comandutaba, stated the following:

The Lacanian practice, if it is to be distinct from the others, can have no other principle than: “it fails.” The Lacanian practice, it fails. You will even recognize in this failing, a *leitmotif* of the later Lacan. He did everything to place himself in the position of failing his knots, and evidently, this failure is not a contingent one. This failure is a manifestation of an impossible. Moreover, Lacan was led to this by Freud's own indications, was he not? Psychoanalysis, the impossible profession. In effect, these notions of failure and of the impossible invaded us, his listeners and his readers. He inoculated us with these terms, precisely the terms that protect us, that have protected us, which have been like the antibodies to the discourse of “it works” and the new practices of psychoanalysis which have the latter as their principle. The Lacanian practice excludes the notion of success. (Miller 2004)

The impossible is simultaneously that trauma which must be eradicated through the signifier or the substitute code and yet it is also that which gives rise to the very possibility of possibility, and, as a consequence to the space of the impossibility itself.

Summary

This entry has traced three periods of development in the Lacanian notion of the impossible, finding that Lacanian psychoanalysis is not prepared to follow the revolutionary sentiment which insists that we must be realistic and demand the impossible. Lacanians are content only to find what within the impossible as cause gives rise to the necessity and possibility of speech.

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The Possible in the Life and Work of Jerome Bruner

Giuseppina Marsico

University of Salerno, Fisciano, Italy

Federal University of Bahia, Salvador, Brazil

Abstract

One core element of Jerome Bruner's intellectual program is "the possible" as a crucial dimension of our psychological processes and a privileged locus to investigate the interconnection between culture and psyche. Bruner considers the undeniable value of the potential, of the hypothetical, and of what neither was nor perhaps will ever be, but which could have been. In this sense, the exploration of the realm of the possible is configured as the creation of alternative worlds that throw new light on the real world. Narrative is the way to foster our hypothetical thinking. Narrative thinking is strictly related to the imaginative function. A person organizes the world into narrative structures, exploring different possible interpretations of events. She locates experience into a spatial-temporal frame, looking for connections and justification, attributing intentions and motivation to the characters. Narrative structures become the sketch for the creative production of new scenarios. Cultivating the sense of what is possible in our cultural practices epitomizes the Brunerian constructivist vision of the human being as a future-oriented agent who strives to overcome the borders of actual reality toward new possible worlds.

Keywords

Bruner · Culture · Possibilities · Narrative · Education

Introduction

For those who met Jerome S. Bruner sometime during his long life (1915–2016), they know how hard it is to talk of him as one of the giants of

contemporary psychology without talking of him as a man. In Jerome Bruner's trajectory, the professional and personal components are inextricably interwoven. Yet, there are some who talk of Jerome Bruner without having known him directly, and others reluctant to talk about him precisely because they knew him and know how revolutionary his presence was to ever-changing perspectives on the world and on human beings (Marsico 2015a, 2017). Jerome Bruner often started talking to the people around him by saying "Let me tell you a story." The following notes offer a narrative summary of Bruner's academic trajectory.

The Interconnection Between Psychology, Culture, and Education

During the Guest Lecture that Bruner gave at the University of Salerno (Italy) on June 29, 2011, he addressed the always intriguing theme of the relationship between psychology, culture, and education. The lecture's title recalled McLuhan's quip "I don't know who discovered water but it wasn't a fish!" which evokes the idea that we are like fish and the water is the set of our assumptions about the world, many of which are so present in our existence that we do not even see them. They become invisible to our gaze. Bruner was asked the question: "But did it happen that the fish discovered water?" In his rigorous, provocative, and elegant speech, he said that we are like fish in water: We are completely immersed in the culture, we breathe culture, and we realize how pervasive it is only when we step out of the sea in which we are swimming and explore other waters for a while. In this new position, we are able to see the cultural environment we grew up in from a new, external perspective.

Bruner, in fact, argues that all mental processes have a social origin and are influenced by culture through its symbols, its artifacts, and their contexts. To understand, therefore, how we become "human beings," we should take into account how individual action develops through participation in culture and the sharing of its symbolic systems. Bruner emphasizes the

formative role of culture as the main factor that shapes the mind. His approach to education is one of close interaction between education and the culture within which it operates. This requires particular attention to the resources that the context makes available through formal and informal educational processes.

Bruner observes that one enters into culture; one does not learn it (Bruner and Feldman 1993). After all, a person participates in a system of meanings that influences her to such an extent that the cultural dimension becomes a constituent element of her own identity. At the same time, the person, through his continuous interpretive intervention, will contribute to the constant remodulation of culture. The complexity and salience of the connection between psychology, culture, and education thus appear in all its evidence.

Cultivating Possibilities

One core element of Jerome Bruner's intellectual program is "the possible" as a crucial dimension of our psychological processes and a privileged locus to investigate the interconnection between culture and psyche. In particular, this interconnection highlights the undeniable value of the potential, of the hypothetical, and of what neither was nor perhaps will ever be, but which could have been. In this sense, the exploration of the realm of the possible is configured as the creation of alternative worlds that throw new light on the real world (Bruner 1986, 2003).

The exploration of human situations through what Bruner defines as the prism of the imagination is characterized as necessary to reexamine the obvious. In this sense, it becomes necessary for the construction of identity. The fantastic and imaginative component for Bruner not only correlates with fable, legend, and literature, but also shapes the real world. Bruner supports the great ability of myth and tale in its multiple guises to shape human experience. If life, on the one hand, nourishes literature through the possibilities that experience implies, literature, on the other hand, shapes experience and orients culture.

According to Bruner (1979), education to the use of narrative, to the intuitive thought and metaphor, should be the principal task of the teacher. In *On knowing: Essays for the left hand* (1979), Bruner outlines the existence of two modes of thinking: paradigmatic thought that verifies how things are and narrative thought that hypothesizes how they could be or might have been. Paradigmatic thought is conjugated in the indicative mood, due to its certain and defined identity; narrative thought, on the other hand, appears in the subjunctive mood of possibility and uncertainty. The alliance between the two is not only desirable, but also necessary.

School, despite the plurality and diversity with which it is confronted, usually chooses the linearity and safety of the indicative mode to the detriment of the uncertainty and complexity suggested by the subjunctive mode. Bruner (1979) refers to a particular form of combinatorial activity that takes its moves from *multiplicity*, defined as a productive surprise. The ability to understand the complexity and different perspectives within the self and in real life leads the observer/student to be struck by the unexpected, generating a surprising new possibility.

Specifically, Bruner identifies three forms of productivity. First, one form allows making a prediction via sudden intuition or slow process of maturation and collection of knowledge in the field of science. The second restores order to the elements, highlighting not immediately visible relationships and connections, as happens in the fields of music and logic-mathematics. The third form is a metaphorical one, in which the synthesis that connects disjointed aspects of experience pertains to the field of art. The metaphorical procedure explores unexpected connections when considered in relation to common experience, creating what we will call a new syntax of concepts. In this sense, each observer, each student, is called to mediate the experience through the symbol, so as to find the most useful combination.

School should educate the awareness that the ego is not the center of the world, that reality is anything but linear, and that the sense of things does not pass objectively and completely through the attributions of meaning and perspectives of the

individual. Reality is expressed between rational exactness (Bruner's "paradigmatic thinking") and frenetic deformation (for Bruner, "narrative thinking"). School must know how to welcome and manage this complexity, providing students with the means for productive surprise to look for a new syntax, for the possible.

In the classroom, the teacher can elaborate the different antinomies within the creative activity of the multiple:

- By moving away from everything that may seem obvious. He moves away from the usual forms of reality to educate in the formulation of new and different interpretations.
- By managing passion, which grows when trained and which always works in dialectic with decorum, as the impulse always requires a certain amount of reflection (Bruner 1979).

In *Making stories: Law, literature, life*, Bruner describes this multiplicity as what comes after the story (Bruner 2003), that is, not the answer, the solution, the perspective that the story brings in, but rather the problem, the question, the reflection that it arouses and nourishes. The multiplicity described by Bruner is not only intended as an infinite network beyond the story – it has its own dimension in the person, in the centrifugal force that moves her, keeps her alive, and makes her mortal and fleeting.

Here is the process through which the experience is declined in the subjunctive tense. This is what Bruner means when he argues for the need to transform the indicative into the subjunctive. Rooted in what appears familiar (1990), the narrative re-elaborates what is felt as canonical and what manifests itself as possible. The dialectic between the two apparently distant elements is realized in the story which aims to keep the past and the possible acceptably united (Bruner 2003). Bruner's narrative refers to enacted possibilities. Narrating, indeed, not only has to do with memories of the past but also is a symbolic enactment of the present and, even more interestingly, a way to imagine, hypothetical events and possible worlds. People sometimes narrate possibilities they achieved in the past, but narrating is also a

means for imagining what has never occurred and what will never occur. Narrative is a medium at once rooted in reality but also employing symbolic devices. Narrative is the way to foster our hypothetical thinking. Narrative thinking (Bruner 1986) is strictly related to the imaginative function (Tateo 2020).

The person organizes the world into narrative structures exploring different possible interpretations of the events. She locates experience in a spatial-temporal frame, looking for connections and justification, attributing intentions and motivation to the characters (Bruner 1986). Narrative structures become the basis for the inner dramatization and the creative production of new scenarios. Although narrative thinking and imaginative work are universal, narrative structures and frames are, of course, framed by the cultural repertoire of symbolic forms, values, and contexts of activity. We all grow up immersed in a web of bedtime stories, religious myths, cartoons, fairy tales, and short stories drawn from advertising (Pascarella et al. 2021). Additionally, Bruner writes that the creation of the Self is a narrative art. Speaking of the self, thus, becomes synonymous to speaking of the many selves made up of memory, feelings, ideas, beliefs, and subjectivity. However, the creation of the self draws a great deal from cultural guidance (Valsiner et al. 2016), from the expectations of others, and from the culture in which we are immersed and in which we have been formed:

Identity is situational and is distributed among all those groups, institutions and individuals that make up the texture of our lives. In constructing the feeling of being ourselves, of who we are, we use narrative that has a component of fiction, of storytelling. We go along building and evoking fictitious identities that enable us to give meaning and coherence to our lives, to cope with what happens to us and to explain things that break the canonical or established models. (Bruner 2005, p. 14)

The cultural model, tacit and implicit and yet so striking, transforms identity into *res publica* (Bruner 2003) and to put in the subjunctive way *the experience* to the extent that it confronts the person with the otherness that is, by its nature, multiple and composite. In the always rich and

confusing realm of human interactions, we create a lifeworld inhabited by narrated stories (Bruner 1986, 1990, 1991, 2003) in the form of narratives, such as histories, stories, myths, and ideologies. For Bruner, narrative seems as natural as language itself. Narrative, in fact, is a conventional resource for the creation and transmission of the culture. Narrative does not call for any truth/falsehood verification. It need only satisfy the criterion of “verisimilitude,” which appeals to the coherence of our experience, the need to communicate a specific knowledge of the world and to understand ourselves and others. According to Bruner:

Insofar as we account for our own actions and for the human events that occur around us, principally in terms of narrative, story, drama, it is conceivable that our sensitivity to narrative provides the major link between our own sense of self and our sense of others in the social world around us. The common coin may be provided by the forms of narrative that the culture offers us. (Bruner 1986, p. 69)

In other words, the study of narratives is not just an investigation of narrated fact, but of how we make worlds (Goodman 1975) and how we make ourselves and how we foresee new future possibilities (Bruner 2001).

Conclusion

Over the course of his career, Bruner covered a number of different fields to which he always made original contributions. Yet, in Jerry’s inquisitive mind, from the very beginning there had been three main questions: “*What makes human beings human? How did they get to be that way? How can you be more so?*” This is the very core of cultural psychology! The fundamental issues of who we are as humans and how we become humans imply a holistic approach to the *psyche* in its complexity (Valsiner 2014). The legacy of Jerry Bruner is taken over by those scholars that are working in turning psychology into a science of the human ways of being. Being is not merely an ontological state, but the *process of existing* that entails the construction of the human world (Valsiner et al. 2016). Cultural

psychology, thus, is the science of *human* nature and of specifically human ways of existence that starts from the perspective of higher psychological functions to look at how their lower counterparts are reorganized. Cultural psychology “cultivates new possibilities” for studying behavior or cognition by looking at the normativity and narrative dialogicality of higher psychological functions in multiple forms and arenas of human activity.

The human psyche is goal-oriented, operates on the borders between past and future, and unites personal and social sides of its development through various aspects of culture. As Bruner pointed out in his last interview before his death (Marsico 2015b), psychology necessarily deals with conflicting, unpredictable, and ambiguous situations. Thus, human dilemmas are, heuristically speaking, the most fitting phenomena to investigate. These dilemmas challenge the culturally established set of meanings, making the emergence of novelty possible. The borders between *actual* and *possible worlds* are at stake here and acquire an epistemological and methodological relevance in our globalizing societies, where the social practices of border construction and reconstruction (Marsico 2015b) and the cultural organization of borders within educational settings (Marsico et al. 2015) have profound implications on how we can *become more human*, cultivating new developing possibilities for the next generations. In Bruner’s own words:

I want psychology to enter the world more fully, as Malinowski did nearly a century ago, in his brilliant *Crime and Custom in Savage Society*. I think such cultural inquiry (which is growing) is essential for cultivating and maintaining psychology’s breadth and scope. They make us forever aware of the constraints and the opportunities that characterize the human condition. (Bruner 2012, p. 12)

Once again, Bruner’s ideas are feeding the advancement of contemporary cultural psychology (Bruner 1996; Tateo 2016). Cultivating the sense of what is possible in our cultural practices epitomizes the Brunerian constructivist vision of the human being as a future-oriented agent who strives to overcome the borders of actual reality toward new possible worlds.

Cross-References

- [Anticipation](#)
- [Constructivism](#)
- [Creating the Future](#)

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The Possible in the Life and Work of John Dewey

Kjetil Egelanddal and Ingunn Johanne Ness
Centre for the Science of Learning & Technology
(SLATE), University of Bergen, Bergen, Norway

Abstract

The American philosopher John Dewey and the tradition of pragmatism is often connected to the concept of experience. This entry explores John Dewey's pragmatism with a particular emphasis on experience as transformative events based on two main principles – continuity and interaction. In relation to this we discuss how experience is linked to imagination and seen as a transformative source. Experience can be perceived as a creative process in which the meeting of different experiences creates new ideas and new understandings revealing what is possible. Consequently, experiences do not only form the basis for what we can do and understand, but also what we can imagine and create. Despite the positive and educative associations to the concept, experience is not always an educative phenomenon and Dewey realized that some experiences can also be harmful. Thus, in order to understand the complexity of the concept we also elaborate on educative and miseducative experiences, and the relationship between experience and moral judgement.

Keywords

Pragmatism · Dewey · The possible · Experience · Imagination

Introduction

In this chapter, we will focus on how we, through our interaction with our environment, undergo experiences and change through these experiences. The focus is especially directed on how our experience opens the possibilities for what we can learn, think, and understand, how we see ourselves and the world, what we can imagine, and how we act. This is done in light of the philosophical tradition of pragmatism and the American philosopher and educator John Dewey.

We start by presenting the pragmatist view of knowledge and Dewey's conception of experience as transformative events that are based on two principles: the principle of continuity and the principle of interaction. Further on, we discuss Dewey's concept of experience in relation to imagination and the possible, before moving into experiences as educative and miseducative, and finally, their relation with interpretation and moral judgment.

Pragmatism

Pragmatism is a philosophical tradition that originated in the USA around 1870. Charles Sanders Peirce (1839–1914), William James (1842–1910), and John Dewey (1859–1952) are considered the most central pragmatists. In recent times, philosophers like Richard Rorty, Hilary Putnam, and Robert Brandom are also regarded as representatives of this tradition.

The term pragmatism comes from the Greek word “pragma,” which means action or practice, and what characterizes pragmatism is precisely the emphasis on practice and humans as acting beings. This emphasis on action is associated with the idea that the consequences of our actions determine whether an idea or practice is acceptable or must be rejected. From a pragmatic point of view, for example, it is reasonable to claim that knowledge and ideas are best understood considering their practical uses and functionality. In this lies the fact that “truth” is closely connected with our experiences of “what works.” This is why Dewey (2008 [1938]) uses the term “warranted

assertions” when talking about knowledge. The reason for this is that we can potentially always make new experiences that challenge what we already know. In other words, it is when our ideas and knowledge are tested and we experience their consequences that we realize whether and if they are usable or must be rejected or revised. It is important to note that even when an assertion is confirmed, it remains a “warranted assertion.” This implies an openness to the fallacy of what we believe is true. This is why pragmatists often argue that the goal of research is to be useful (James 2000; Johnson and Onwuegbuzie 2004; Noddings 2007; Feilzer 2009). From such a perspective, the value of knowledge is assessed through its use, i.e., knowledge is primarily a tool for exploration and practice that needs to be tested.

John Dewey

John Dewey (1859–1952) was born in 1859 in Vermont, USA, the same year as Charles Darwin’s *The origins of Species* were published, and Dewey’s philosophy is clearly inspired by these naturalistic currents. However, this is not reductionistic naturalism attempting to explain the human condition through narrow scientific methods and concepts, but a naturalism that considers humans as agents who interprets and acts in their environment through their experiences, intentions, and values.

When reading Dewey, we soon realize that experience is a key concept, which is highlighted in the titles of his works: *Experience and nature* (1921), *Art as experience* (1934), and *Experience and education* (1938). With his concept of experience, Dewey presents a nondualistic understanding of reality that rejects traditional distinctions between theory and practice, thinking and action, facts and values, etc. Instead, he considers human thoughts as “tools” for expectations, problem-solving, and action, and rejects the idea that the function of thoughts is to describe, represent, or mirror an immutable reality. For Dewey, our thoughts and ideas are inevitably used in our actions, and our experiences of

the consequences of when we act change our ideas based on how they work. In this way one can say that the human condition is to be in a continuous interaction process with the environment around us – where both our understanding and the environment change in light of what we experience.

Experiences as Historically Conditioned and Transformative Events

Dewey (1997 [1938]) considers experiences as transformative events that change those who undergo them as well as their ability to make new interpretations. The concept of experience is therefore related to the phenomenon of understanding and this affects how new insights, attitudes, and moral judgment are formed. Experience is according to Dewey (1997 [1938]) based on two principles: *the principle of continuity* and *the principle of interaction*. We will first look at the principle of continuity. This entails that process of experience always connects the present and the past because past experiences affect how future experiences become. The other principle, the principle of interaction, is about new experiences arising through the interaction between the individual’s internal conditions (shaped by previous experiences) and external (“objective”) conditions (consisting of the environment surrounding the individual):

... it [the principle of interaction] assigns equal rights to both factors in experience – objective and internal conditions. Any normal experience is an interplay of these two sets of conditions. Taken together, or in their interaction, they form what we call a situation. (Dewey 1997 [1938], p. 42)

In other words, through this interaction, new experiences are made possible, but also limited by the conditions who are present (both internal and external) in each situation. Because a person’s internal conditions are shaped by previous experiences, previous experiences are crucial for how external conditions are interpreted and how a situation is formed. The principle of continuity and the principle of interaction are, thus, inextricably connected:

What he [the individual] has learned in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow. The process goes on as long as life and learning continue. (Dewey 1997 [1938], p. 44)

This means that we use our previous experiences when interpreting a new situation; at the same time, our new experience of this situation changes our understanding and shape how we interpret future situations.

In order to understand these abstract notions, let us imagine a machinist facing a broken car engine. Although he/she only has experience in repairing boat engines, he/she will still have better prerequisites for repairing the car engine than a teacher or a doctor. Nevertheless, he/she might experience that his/her knowledge is not sufficient to repair the given engine, and that he/she needs to make new experiences that can provide him/her with better insights. One can imagine that he/she thus initiates a thorough investigation in which he/she searches for information on the Web (discussion forums, manuals, etc.), studies the engine carefully and tests various solutions, and maybe contacts a friend who is a car mechanic. The experiences the machinist undergoes through these interactions changes his/her understanding of the specific car engine and engines in general. These experiences can, thus, be used to both to repair the car engine in question and to interpret and act in new situations in the future.

It is, however, important to note that this process of experience is not just a linear process that cumulatively helps us understand the world better and act in it, it is also very much a creative process in which the meeting of different experiences creates new ideas and new understandings of what is possible. Experiences do not only form the basis for what we do can do and understand, but also what we can imagine and create.

Experience and Imagination

To Dewey, imagination is an integral part of human activity, experience, and growth (Krüger 2002, p. 188). Imagination serves as stimuli for

thinking and reflection and can be said to be a transformative force of the mind that is connected to the possible and enables us to grasp what lies beyond what we can observe. Dewey sees imagination as a natural part of learning and communication that extends beyond the situation we are in here and now. Dewey points to how a child can play with a boat and imagine other situations with the boat, as an example of how this ability drives the child's activity forward. He says that the child can:

... change the material that serves as a boat almost at will, and introduce new factors as fancy suggest. The imagination makes what it will of chairs, blocks, leaves, chips, if they serve the purpose of carrying the activity forward. (Dewey 2004 [1916], p. 165)

This quote shows how a child is able to consciously recreate images in the mind based on experiences with events or objects, and then use these experiences to imagine something else. This quality is also central to our empathy and capacity to understand other human beings as well as our ability to solve different problems.

Problem-solving is very much an act of reflection. Dewey sees problem-solving as a process developing in five stages: First, we have a perceived problem, disagreement, or conflict arising. Second, we think through the problem and try to find out what is essential in order to solve it. Third, we try to imagine different possible solutions. Fourth, we start developing hypotheses through reasoning and experimentation. Fifth, we observe and test and this results in the approval or rejection of our hypothesis. Dewey (2004 [1916]) argued that it is crucial to gather information that makes it possible to investigate the problem at hand in an appropriate way and that it is important to actually test out the hypothesis to see if they hold. In any case, the problem-solving process will be something one can explore and learn from.

Dewey does, however, not consider problem-solving as an individual activity, but more as a social process in which people are jointly trying to solve problems. In such processes in which new ideas are to be created and tested, imagination plays an important part. What an individual possesses as knowledge accumulated through its past

experience serves as a tool for what it can understand and can imagine. In short, an individual's past experiences form a repertoire of tools that informs a person's mind and will influence the options that seem possible for that person in any new situation. In daily life, when a group of people discuss how to solve a problem together, a potential exchange of experience will often take place. Most likely they will have different experiences and this diversity is key to stimulating the imagination when they share their different views (Ness 2020). It is, however, important that the participants of a discussion manage to share their ideas in a way that becomes meaningful for each other to establish a common understanding. Furthermore, for new ideas to be imagined, it is also important that the different perspectives challenge each other. In this way, the individual's imagination can be expanded through a reconstruction of previous experiences, making new solutions appear. It is worth noting here that this is the same process as the processes enabling new knowledge and technology to emerge and be developed in a culture.

In the next section we will explore this further and look at what conditions must be present for a new experience to take place.

Conditions for New Experiences

So far, we have seen that according to Dewey (1997 [1938]) we are continuously engaged in an interactive process with our environment. Through this interaction, new interpretations become possible, but also limited by the conditions present (both internal and external) in each situation. The current situation, however, both relates to the future and the past. The future because we engage with our environment through our plans and expectations. The past because our current understanding is formed by previous experiences which condition how new situations occur for us. The process of experiencing is, thus, continuous, where the interplay between past experiences, plans for the future, and external conditions affect how new experiences come into being. This continuity of experience can

therefore be depicted as a spiral. Since every spiral of experience is unique, since no one lives identical lives, our expectations, interpretations, and understandings will be different.

This way of thinking about experience is very similar to that of the philosophical hermeneutics, represented by the German philosopher Hans-Georg Gadamer. According to Gadamer (2012, p. 347), we can consider two types of experiences: experiences that correspond with our expectations and confirm them, and new experiences that thwarts our expectations. Gadamer regards the latter as real experiences, experiences which are essentially negative because they disprove our expectations. This negativity is, however, a productive one because it liberates us from wrongful assumptions and provides us with new insights. That is, a new experience implies, on the one hand, acknowledging that one's understanding was inadequate, while, at the other hand, it entails acquiring a new horizon of understanding shedding new light on a matter (Gadamer 2012).

Gadamer (2012) also highlights the linguistic dimension in an experience. Experiences are not only a consequence of pure sensory impressions, but the result the dialectical interaction between questions and answers, between the interpreter and what is interpreted. When we interpret something, we use our preconceptions (prejudices) as an interpretive framework. That means, the questions we can ask are made possible, but also limited by our horizon of understanding. In other words, our previous experiences represent the opportunities for the dialogues we can have with the world, making certain conversations possible and others impossible.

According to both Gadamer and Dewey experiences are not just a matter of new insights in a particular area, but something that changes our understanding holistically. An experience represents a breach with our expectations that allow us to see ourselves and the world in a new perspective. That is, the experiences we undergo affect how we become as human beings.

To illustrate: When reading a text, you use relevant past experiences to ask questions to the text and interpret its meaning. Through this process of interpretation, you might be subjected to

unfamiliar perspectives that changes your horizon of understanding and the questions you are able to ask. This affects both the way you understand the text itself and your ability to interpret other texts in the future. Such an experience, however, is not solely restricted to text interpretation, but also provides a new horizon of understanding through which you can see yourself and the world.

In our lives these interactions happen continuously through our meetings with other human beings and the materials that surrounds us, where both the internal and external conditions in our environment affect our interpretations and how our horizon of understanding changes. Because we all live different lives, our understanding and imagination will differ.

It is, however, not so that all changes are for the better. Dewey (1997 [1938]) argues that in the context of educating and parenting, we need to separate between experiences that are educative, miseducative, and noneducative.

Educative, Miseducative, and Noneducative Experiences

Dewey (1997 [1938]) distinguishes between experiences that are noneducative, educative, and miseducative. Noneducative experiences refer to interactions between the individual and its environment that do not contribute to new experiences; for instance, if the individual does not get a meaningful experience out of a situation because there is no connection between previous experiences and the object of interpretation. For example, you cannot read a text in Japanese if you do not understand the language. An attempt to read the text will thus become noneducative, at least in terms of understanding the text. Similarly, a situation might be noneducative if it simply confirms what has already been experienced before. For example, you might observe that throwing a rock into the air results in the rock coming down again, as you have experienced before. Hence, no new experience is made.

Dewey (1997 [1938]) realizes, however, that the question of experience is not simply a question about gaining new experiences regardless of their

consequences. It is also a normative question, at least from the perspective of an educator or parent who needs to consider that some experiences might also be harmful for their children/pupils. Dewey therefore separates between educative and miseducative experiences in terms of what an experience may lead to. Using “growth” as a metaphor, Dewey (1997 [1938]) associates growth with the ability to make new experiences in new directions. The quality of an experience is, thus, related to whether it promotes or restricts the opportunity for future experiences. According to Dewey (1997 [1938]), an experience that offers good conditions for growth in new directions is considered educative, while an experience that inhibits or disrupts growth is considered miseducative.

Although all experiences both promote and inhibit opportunities for further experiences, one can imagine that some experiences are less restrictive than others. For example, learning to read will probably open a child to many new experiences. While, conversely, experiencing that others do not value you may be restrictive for your possibilities to make social experiences. Furthermore, it is important to note that it is not only the external conditions themselves that determine whether an experience is educative, but how the external and internal conditions interact. Therefore, the same external conditions can lead to different experiences depending on an individual’s internal conditions. This means that even the process of learning something commonly considered good may have undesired consequences. Dewey calls this “collateral learning”:

Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular things he is studying at the time. Collateral learning in the way of formation of enduring attitudes, of likes and dislikes, may be and often is much more important than the spelling lesson or lesson in geography or history that is learned. For these attitudes are fundamentally what count in the future. (Dewey 1997 [1938], p. 48)

The point is that the experiences a person makes help to shape how he/she becomes. In other words, an experience means not only that we understand an object, phenomena, etc., in a certain way, but also that we understand ourselves

in a certain way through the experience as a whole. In this way, any experience becomes a point of reference for how we understand ourselves in the world. A parent or a teacher can therefore not be content with focusing exclusively on external conditions of the child(ren) which he/she is responsible for, he/she must also take into account their subjectivity and development as human beings. In the next section, we will look at how the process of experience is also connected with the development of moral judgment.

Experience and Moral Judgment

Educative experiences for Dewey (1997 [1938]) imply a gradual emancipation from immediate impulses and drives. Since we, as human beings, can plan the future in the light of past experiences, we are not bound by a particular situation in time, but able to take a general perspective independent of our immediate desires. To take a general perspective is not solely an innate ability, but a result of experience and linguistic development. Our ability to anticipate and assess the consequences of our actions and inactions are therefore shaped through the life we live.

However, anticipating and assessing the consequences of an action also means making an ethical assessment. At this point, Dewey's concept of experience is similar to the ancient philosopher Aristotle's (2009) concept of moral judgment, *phronesis*. *Phronesis* differs from fixed skills and knowledge in that it is about judging what may in principle be different. While skills and knowledge make it possible for a person to change tires on a car, *phronesis* concerns judgment of when one *should* change the tires. This kind of contemplation relates to our actions, that is, to consider what is the right thing to do in each situation. In other words, it is this reasoning we use in daily life when we decide what we do and what we refrain from doing. This ability to make moral judgements is related to our experience, understanding, and imagination as a whole.

When we experience something unfamiliar in a specific situation, this experience changes us and

leads to new understanding and self-understanding. This affects how we interpret new situations. Our experiences, however, also affect our attitude to what is right and wrong, and our ability to judge what is right in the individual situation. We therefore use our imagination and judgment, shaped by past experiences, when we consider what a specific situation requires from us. Our understanding and judgment are, in turn, affected by how we experience the consequences of our actions. In other words, experience, understanding, imagination, and judgment are intimately related:

1. We interpret a new situation through our current horizon of understanding.
2. Through our understanding of what the situation requires and imagining possible solutions we act.
3. The experiences we undergo as a consequence of our actions affect our understanding and self-understanding we change.
4. We can face new situations with changed imagination and moral judgment.

Knowledge and skills are tools we use when we act, but these tools can be used differently depending on how a person interprets a situation and what this person might want to achieve. An action is thus a result of what we can understand, what we can imagine as possible, and what we can do. What we *can* do is, however, subordinate to what we *choose* to do. Our imagination, skills, and knowledge must therefore be considered in the context of our moral attitude to what is right and wrong. Dewey (1983 [1922], p. 194) argues that it is wrong to make moral "A separate department of life." According to Dewey, morality is not something that we only use on special occasions, all situations require moral judgment. This is as much about assessing what one should refrain from doing, as what one should do. Of course, a person's moral judgment may be more or less morally conscious, and actions may be considered more or less morally sound. The point is that all situations place moral demands on the individual. How we chose to interpret and react to these demands, however, will differ from person to person. In

retrospect, many of us probably think that we have sometimes acted right and sometimes acted wrong. What we should have done, we often do not realize until later. Such experiences, however, can help us assess and imagine future situations.

Conclusion

In this chapter we started by presenting the pragmatism's view of knowledge and Dewey's conception of experience as transformative events that are based on two principles: the principle of continuity and the principle of interaction. Further on, we discussed Dewey's concept of experience in relation to imagination and the possible before moving on to experiences as educative, miseducative, and noneducative, and, finally, the relationship between experience and moral judgment. Through this presentation we have highlighted that experiences are considered by Dewey as historically conditioned transformative events occurring through a continuous and lifelong interaction process between individuals and their environment. They are historically conditioned because previous experiences affect how we interpret and deal with future events. They are transformative because new situations, in which new experiences are made, changes our understanding, providing us with new horizons through which we can interpret, imagine, and create. This implies a continuity where previous experiences are used in new situations, and new situations reconstruct our experiences. Knowledge and skills are tools we use when we act but these tools can be used in differently depending on how a person interprets a situation and what this person might want to achieve. An action is thus a result of what we can understand, what we can anticipate, what we can imagine as possible, and, thus, what we can do in the end. The concept of experience is related to the possible and to what we can imagine as a transformative source. Experiences do not only form the basis for what we do can do and understand, but also what we can imagine and create.

The process of experience can therefore be described as a spiral; an individual's horizon of understanding affect what experiences can be

made and how they are made, and new experiences affect the individual's horizon of understanding. Experience, however, is not only about acquiring new knowledge, but also about how one is formed as a human being, and is thus also a moral phenomenon. Experiences entail a real change of an individual understanding and self-understanding which reflects on one's moral judgment when imagining and choosing how to act in each situation. We are therefore at the mercy of our experiences in how we become as human beings. This requires a particular awareness from educators and parents to consider whether the experiences their children undergo are educative or miseducative in a broad sense.

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The Possible in the Life and Work of Julia Kristeva

Nicoletta Isar

University of Copenhagen, Copenhagen,
Denmark

Abstract

A mode to address “the possible” in Julia Kristeva’s work is from the perspective of her concept *chora*, inspired by Plato’s similar term from his dialogue *Timaeus*. It is important to stress first the open character of Kristeva’s semiotic *chora*, and of the choral phenomena that take place in the semiotic *chora* in the process of the definition of the subject. Kristeva’s signifying subject is never fixed, but always in process, or in trail. Always in conflict with the symbolic function, and in revolt against prohibitions, the subject constantly searches for new possibilities of expression. The affective and conflictual phenomena, such as sensation, mood, and memory, situation and accident exceed the law of signification and determination of the subject in process. Kristeva’s *chora* makes room for the undetermined and undeterminable possible, challenging determination, fixity or stasis, and giving an insight into the extralinguistic processes, into the origins. In the absence of the semiotic *chora*, the humanities would remain “archivistic, archaeological, and necrophiliac” (Kristeva, RPL 1974, p. 13). The semiotic makes possible to express the unquantifiable processes, like poetic language, and the ephemeral arts that would never be inscribed in the process of signification. Kristeva’s view of art as the only means by which *jouissance* (pleasure) can infiltrate the symbolic order opens up to unexpected possibilities for signifying (poetic) subject. It gives poetry incomparable powers of expression. Creation emerges as a process of transformation of the semiotic into the symbolic, always a process of becoming, in which the possible manifests itself.

Keywords

The semiotic *chora* · *sujet en procès* · Poetic revolution · Possible at last

Julia Kristeva: General Presentation

Julia Kristeva is a French psychoanalyst and philosopher, a literary critic and a novelist, as well as a practicing psychoanalyst. She was born in 1941 and educated in Bulgaria, being acquainted with the French culture, and the literature of Voltaire, Victor Hugo, Blanchot, Celine, as well as the Russian formalism and post-formalist theories, including Mikhail Bakhtin whom she introduced to French scholarship. She emigrated to Paris in 1965 to pursue her studies, after receiving an academic degree from the University of Sofia. In Paris, she has been introduced to the intellectual circle of French structuralism, Marxism, and Freudianism, and she attended seminars by Goldmann, Roland Barthes, and Jacques Lacan and Claude Lévi-Strauss. Kristeva joined the faculty of the University of Paris VII–Denis Diderot in 1974, and she received in 1979 the license for practicing psychoanalyst. Kristeva is the author of more than 30 books, and she is presently a professor emeritus at University of Paris Diderot–Paris 7.

The Psychoanalytical Work: The Subject in Process, and The Semiotic *chora*

In her first books, *Séméiotiké: Recherches pour une sémanalyse* (1969), *Le Texte du roman* (1970), and *La Révolution du langage poétique* (1974) (*Revolution in Poetic Language*, 1984) (RPL), Kristeva has already opened up a new direction of research in semiotics and linguistics. Her main theme of research was the speaking subject, around which she elaborated such concepts, as the abjection, love, and melancholia. These concepts are presented in the seminal books *Pouvoirs de l'horreur: essai sur l'abjection* (*Powers of Horror: An Essay on Abjection*, 1980), *Histoires d'amour* (1983) (*Tales of Love*, 1993),

Soleil noir (1987) (*Black Sun*, 1989), *Étrangers à nous-même* (1988) (*Strangers to Ourselves*, 1991), and *Les Nouvelles Maladies de l'âme* (1993) (*New Maladies of the Soul*, 1995).

Kristeva challenged the structuralism practiced in various fields, like linguistics, by Roland Barthes, Ferdinand de Saussure and Charles S. Peirce, anthropology and social and human sciences, by Lévi-Strauss and Althusser, as well as, Lacan in psychoanalysis. In her opinion, structuralism lacked dynamicity, operating with static structures, and the philosophical ideas practiced by structuralism were “nothing more than the thoughts of archivists, archaeologists, and necrophiliacs” (Kristeva 1974, RPL, p. 13). Kristeva sets herself the task to put forward a dynamic “theory of signification” that would allow changes and alterations, transformations, and open up new possibilities to work with the speaking subject within the theories of language. An illustrative example in this sense, developed in her book RPL, 1974 is the concept of the speaking being that she defines as a dynamic *sujet en procès*, that is, a subject in process or on trial. According to Kristeva, in the signifying process of language, the semiotic and the symbolic are two inseparable modalities since the subject is always both semiotic and symbolic. The psychoanalytic *sujet en procès* (subject in process/in trial) is a subject continuously in process/on trial between the semiotic and symbolic. Kristeva borrows the term *chora* from Plato’s dialogue *Timaeus* “to denote (48e-53c, 1975) an essentially mobile and extremely provisional articulation constituted by [bioenergetic] movements and their ephemeral stases” (Kristeva, RPL 1974, p. 25). For Plato, *chora* is a third genre of reality that exists before the generation of the cosmos, it is the space-in-between the visible cosmos (the copy) and the invisible/intelligible model. *Chora* is the matrix in which the universe comes to being, the world of Becoming, separated from Being. Plato’s *chora* is “a mobile receptacle of mixing, of contradiction and movement, vital to nature’s functioning before the teleological intervention of God, and corresponding to the mother [...]” (Kristeva 1977, p. 57). Kristeva defines the semiotic *chora* as the maternal receptacle or womb, “a place of chaos and which is and which becomes,

thus, without identity and without reason” (Kristeva 1977, p. 57). The chaotic space of *chora* “is and becomes a precondition for creating the first measurable bodies” (Kristeva 1977, p. 57). The semiotic *chora* “operates according to a maternal logic, which prefigures the Law of the Father. This law before the Law is the law of the mother’s body which regulates the oral and anal drives” (Kristeva 1974, RPL, p. 27), and provides the organizing principle of the maternal body, the “law before Law.” For Kristeva, the semiotic *chora* “precedes evidence, verisimilitude, spatiality, and temporality” (Kristeva 1974, RPL, p. 26), it precedes the ego thinking, this is to say, it exists before meaning exists (Kristeva 1974, RPL, p. 36). *Chora* is the necessary ground, essential to the functioning of sign and signification. Its function is to displace the speaking subject, tracing it back before *logos*, to the archaic preverbal maternal body. This displacement of the speaking subject generates a crisis in signification. The *chora* is the site of this crisis, but it is also a space where a new modality of signification operates. *Chora* is “a non-expressive totality formed by the drives (*pulsions* and their *stases* in a motility” (Kristeva 1974, RPL, p. 25), moving through the body of the subject, “always already in a semiotic process” (Kristeva 1974, RPL, p. 36). But it is this “multiplicity of expulsions” that ensures the “infinite renewal” of the subject, the infinite possibilities for its signification (Kristeva 1998, 134). This is what defines the subject in process, and the semiotic *chora* is itself the place of its perpetual renewal due to an infinite chain of body movements in the signifying process. Neither sign nor signifier, neither model nor copy, *chora* is a *process*, a verb not a noun, an operation analogous to vocal or kinetic rhythm, constantly to be restored (Kristeva 1974, RPL, p. 26). The “drives” are ambiguous, simultaneously assimilating and destructive (Kristeva 1974, RPL, pp. 27–28), and this movement belongs to the representation of *chora* as semiotic. Kristeva is indebted at this point to Freudian and Lacanian notions of the unconscious, the drives and primary processes that articulate the fragmented substance, not yet constituted as the body of the subject (Kristeva 1974, RPL, p. 25). This particular aspect is further discussed by Kristeva in terms of abjection in order

to define the chaotic, unformed maternal womb, which gives rise to language, and provides a place for that which is not itself linguistic. The bodily drives “extract the body from its homogeneous shell and turn it into a space linked to the outside” (Kristeva 1998, p. 143). By placing movement at the core of its structure, the semiotic *chora* presents an infinite potential and possibilities for creating signifying changes, and for transformations of the subject, threatening the unitary subject discovered by psychoanalysis by this movement, which is only one moment, a time of arrest, a stasis (Kristeva 1998, p. 134).

The process of signification takes place through two modes: the semiotic and the symbolic. According to Kristeva, semiotic activity is the work of the drives that stem from a semiotic body (Kristeva, *Desire in Language*, p. 136). The semiotic is rooted in the affective drives and energy, whereas the symbolic is the realm of language, of law and prohibition, which imposes order on experience. The semiotic mode manifests through rhythm, gesture, tonality, and affect, while the symbolic defines the subject through representations, signs, symbols, and meaning. In the process of signification, *chora* is the space of instability and duplicity, uncertainty and hesitation. The dualism of *chora*, which Kristeva represents as a tetrad or a double helix, makes the “semiotized body” a place of “permanent scission” (Kristeva 1987, *Soleil Noir*, p. 148), always at risk and unstable. Yet only together, the semiotic and the symbolic give signification to the subject, both through gestures and voice, as well as through articulated speech and words that carry the meaning.

The Semiotic *chora*: A Space of the Possible

In Kristeva’s theory of the subject in process, the semiotic is a medial space, as the Platonic *chora* is the third kind of reality, a space-in-between. Kristeva’s semiotic *chora* is the place that mediates between the imaginal and the rational, between the body and the mind, and between the self and the other. Finally, Kristeva’s *chora* is “a mediating space that preserves the alterity of the

entities engaged in the process of mediation, though not at the expense of their connectedness” (Margaroni 2005, “The Lost Foundation,” p. 82). This is a place of mediation, as well as a place of scission, a place of subversion of the symbolic logocentric masculine. It is thus a place of violence. The violence of the originary *chora* breaks the walls of the symbolic order and dissolves the logical order. As a result, “the subject crosses the border of the symbolic and reaches the semiotic ... which is on the other side of the social frontier” (Kristeva 1974, RPL, p. 79). The semiotic articulates a continuum among one’s drives, one’s vocalizations, and the symbols of one’s society (Kristeva 1974, RPL, p. 28). Entering into the semiotic area, one enters into the imaginal field, which disrupts the institutional frame of the self. The heterogeneous semiotic aspects of the self cannot fix its identity. Manifested in the “first echoaliases of infants” as rhythms and intonations, they predate the linguistic units of the psychotic language. This heterogeneity of the semiotic produces effects of poetic language, “musical” and “nonsense effects,” which destroy the settled rules and significations (Kristeva 1980a, “From One Identity to an Other,” p. 133). It shows the role of the somatic (the physical body) in the articulation of the imaginal, of language and, and the self. Referential for the discussions on the speaking subject are Kristeva’s texts of the 1980s, especially *Pouvoirs de l’horreur: essai sur l’abjection* (*Powers of Horror: An Essay on Abjection*, 1982).

In *Powers of Horror: An Essay on Abjection* (1982), Kristeva elaborates on the abject, unformed maternal womb, which arises in the passage from the semiotic to the symbolic in the development of the speaking subject. The process of signification is a process in constant making and unmaking, since the two modalities taking part in the definition are always in tension and contradiction. Meaning is disrupted, because the semiotic elements can disrupt the symbolic elements, and the unconscious can disrupt conscious meaning. As a result, a series of possibilities may open to create new configurations of the speaking subject, turning it into the “ground” for potentially infinite transformations of the subject. In this sense, we can say that the semiotic *chora* is the

place of all possibilities. This chain of possibilities, albeit, is a problematic “possible.” The problematic aspect of this “choraic possible” derives from the lack of determination and unity of Kristeva’s semiotic *chora*, as well as from its mobile and contradictory character. “The possible,” says Mikael Epstein, “is not the existing or its negation, it is not that which is or is not, it is a special mode of being that in general cannot be translated into the language of real or ideal existence” (Epstein, *The Philosophy of the Possible*, p. 9). Applying to Epstein’s definition of “the possible” to reflect upon Kristeva’s “choric possible,” the aporetic manifestations of the Kristevan’s subject are apparent. These manifestations are in line with the Platonic oxymoronic *chora*, the model used by Kristeva. *Chora* is, in its essence, always the space of aporia in which contradictions dwell. This conflictual space, “one of those violent, dark revolts of being,” generates abjection. Kristeva’s abjection is the response “directed against an exorbitant threat which seems to emanate from beyond the possible, the tolerable, the thinkable” (Kristeva 1982, *Power of Horror*, p. 1). Celebrating the writing of abjection (more exactly, that of Celine) – “possible at last” – Kristeva is responsible for a psychology of “the possible,” albeit a possible “beyond possible.” For Kristeva’s “possible” is “a sublimation of abjection,” a substitute for the role formerly played by the sacred,” and thus, a “sublimation without consecration” (Kristeva 1982, *Power of Horror*, p. 26). This oxymoronic possibility beyond all possibilities, beyond containment and assimilation, ultimately beyond the thinkable and the signifiable, turns its own subject vertiginously and inescapably against itself. Trapped in endless processual reinscriptions, the subject is constantly under trial, the trial “of that impossible [language] constituted either by a-subjectivity or by non-objectivity” (Kristeva 1982, *Power of Horror*, p. 26).

Possible at Last

Poetic Language and the Subject in Process Between Psychosis and Creativity

What makes the work significant, writes Kristeva, is the textual presence – poetic language, which

bears a more basis significance that has to do with our being-in-the-world (Kristeva 1974, RPL, p. 7).

“Poetry,” argues Kristeva, “more precisely, poetic language – reminds us of its eternal function; to introduce through the symbolic that which works on, moves through, and threatens it. The theory of the unconscious seeks the very thing that poetic language practices within and against the social order; the ultimate means of its transformation or subversion, the precondition for its survival and revolution” (Kristeva 1974, RPL, 81).

The idea that poetic language constitutes a “semiotic system” must be taken only within Kristeva’s polarity of the symbolic and semiotic dispositions in the signifying process (Kristeva 1974, RPL, pp. 2–3). The revolution of the poetic language is Kristeva’s original idea, which refers to the changes in the poetic language at the end of the nineteenth century that allowed the subject’s dialectical state in language. The link between poetic language and revolution is neither causal nor immediate (Kristeva 1974, RPL, p. 3). Pointing out to the manifestations of the semiotic dispositions, Kristeva demonstrates “how closely their [poets’ and novelists’] writing practice parallels the logic of the unconscious, drive-ridden and dark as it may be; such a practice thus assumes that privilege of communicating regression and jouissance.” (Kristeva 1974, RPL, p. 3). In her view, poetic language refers to “the infinite possibilities of language, and [that] all other language acts are merely partial realizations of the possibilities inherent in poetic language” (Kristeva 1974, RPL, p. 2). Normative language is just one of multiple possibilities of expression and “ways of articulating the signifying process that encompasses the body, the material referent, and language itself” (Kristeva, RPL, p. 15). The semiotic space as an imaginative space “reveals that linguistic change constitutes change in the status of the subject” in the writer’s relation to the body, the others, and to the physical world. Only through poetic language, and its poetic logic, “by adopting a dream logic, [self] transgresses rules of linguistic code and social morality as well” (Kristeva 1980b, “Word, Dialogue, and Novel,” p. 70). This makes possible to express the double or multiple aspect of human subjectivity. One could also identify new dispositions and new possibilities of developing other modes of

conceiving the self through the imaginative activities. For Kristeva, when the speaking subject becomes a subject in process/in trial (*sujet en procès*), “deep structures or at least transformational rules are disturbed, and with them, the possibility of semantic or grammatical reinterpretation or transformation appears” (Kristeva 1974, RPL, p. 37). In her view, the subject must be firmly posited so that drive attacks against the thetic will not give way to fantasy or to psychosis but will instead lead to, what she calls a “second-degree thetic,” i.e., a functioning characteristic of the semiotic *chora* within the signifying device of language (Kristeva 1974, RPL, p. 50). This new possibility – “the (creative) possible” of the subject in process – is illustrated by the artistic practices, especially, the poetic language. From this perspective, the semiotic *chora* does not appear as a “failure of the thetic,” but it is its very precondition (Kristeva, 1974 RPL, p. 50). In psychoanalysis, neurotics and psychotics, argues Kristeva, are assessed in rapport with their relation with the thetic, where semiotic motility is viewed as a disturbance of language. Resisting to psychoanalysis means to hypostasize semiotic motility, to make it autonomous from the thetic, turning psychosis into a poetic act. Overturning psychoanalysis is, or could be seen, as Kristeva’s instantiation of the possible. It is a practice in which what the semiotic motility “pulverizes,” it could be a new device to provide a new possibility. This completely new and unexpected possibility would be “as if a text, in order to hold together as a text, did not require a completion [*finition*], a structuration, a kind of totalization of semiotic motility” (Kristeva, 1974 RPL, p. 51). In the new disposition of the subject, we have a manifestation of “the possible,” but only of the subject for whom the thetic is not a repression of the semiotic *chora*, but “a position,” taken or undergone that calls into question the thetic so that a new disposition and a new possibility is opened for the subject (Kristeva, 1974 RPL, p. 51).

Kristeva discovers unexpected possibilities of poetic expression even in Saussure’s *Anagrammes*, the surprising research of the father of the linguistic structure. Drawing some theoretical implications from Saussure’s *anagrammatic*

project, Kristeva shapes her own *paragrammatic* conception of poetic language as a free play and as an open-ended web of relations (Kristeva, *Séméiotiké*, p. 114). The *paragrammatic* disposition of the poetic language allows the signifier an unbounded semiological play instead of a mere referential function. It is what she saw in the Saussure’s *Anagrammes*, in which the sign introduces “the heretofore unrecognized possibility of envisioning language as a free play, forever without closure” (Kristeva, *Desire in Language*, p. 128). Saussure himself was impressed by the phonic elements from the Saturnine Latin passage looking as a swarming of syllables or phonic group echoing one another (Stawarska 2017, p. 134). Kristeva’s idea of rhyme and rhythm as patterns that mimic bodily drives validates Saussure’s idea that poetic verse is equipped with structure that does not only operate at the level of the linguistic units (syllables, phonemes), but also at the vocalic level (rhyme, rhythmic repetition). In the rhythmic and repetitive beat of the poetic verse, the externalization of the inner flow of physiological drives is expressed, and a breaking through of the logical structures, subverting language, and making the recitation of the poem memorable. For the world of thoughts has a model in the world of sentences, expression, words, signs, argues Kristeva:

“To the structure of the thought there corresponds the compounding of words into a sentence; and here the order is in general not indifferent. To the dissolution or destruction of the thought there must accordingly correspond a tearing apart of the words, such as happens, e.g., if a sentence written on paper is cut up with scissors, so that each scrap of paper there stands the expression for part of a thought. These scraps can be shuffled at will or carried away by the wind: the connection is dissolved, the original order can no longer be recognized. (Kristeva 1974, RPL, p. 121).

Summary

A mode to address “the possible” in Julia Kristeva’s work is from the perspective of her concept *chora*, inspired by Plato’s similar term from his dialogue *Timaeus*. It is important to stress first the open character of Kristeva’s semiotic *chora*, and of the choral phenomena that take

place in the semiotic *chora* in the process of the definition of the subject. Kristeva's signifying subject is never fixed, but always in process, or in trial. Always in conflict with the symbolic function, and in revolt against prohibitions, the subject constantly searches for new possibilities of expression. The affective and conflictual phenomena, such as sensation, mood, and memory, situation and accident exceed the law of signification and determination of the subject in process. Kristeva's *chora* makes room for the undetermined and undeterminable possible, challenging determination, fixity or stasis, and giving an insight into the extralinguistic processes, into the origins. In the absence of the semiotic *chora*, the humanities would remain "archivistic, archaeological, and necrophiliac" (Kristeva 1974, RPL, p. 13). Kristeva's view of art as the only means by which *jouissance* (pleasure) can infiltrate the symbolic order opens up to unexpected possibilities for signifying (poetic) subject. This is Kristeva's *poetic revolution* and the ground of "the possible" as a passage from semiotic violence to symbolic order, the event of sacrifice. The genesis of the subject is similar to "a scene of sacrifice" (Keenan 2005, *The Question of Sacrifice*, p. 33), and the artist comparable to the "scapegoat." Creation emerges as a process of transformation of the semiotic into the symbolic, always a process of becoming and in which the possible manifests itself. "If creation is, like its human subject, on trial, basically consisting in constantly confronting the choraic motility of the semiotic *chora*, then creation is that flow of *jouissance*, which is therapeutic" (Isar 2005, p. 106).

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The Possible in the Life and Work of Lev Vygotsky

Ian Thompson

Department of Education, University of Oxford,
Oxford, UK

Abstract

The possible, in educational terms, suggests the pedagogical potential of schooling to help children and young persons to change their perceptions about their imagined worlds of the future. It also highlights the possibilities for learning and development for all. Yet

international evidence suggests that the potentials of many young people from economically and socially disadvantaged backgrounds and/or with a special educational need or disability are not currently met by many school systems. In addressing these issues, there is a considerable body of educational research in the fields of inclusion, social justice, and child and adolescent development that draws on the theoretical body of work developed by the Soviet psychologist Lev Vygotsky. Most of these studies draw on either sociocultural or cultural historical activity theory, both of which can be traced back to Vygotsky's work on learning and development with a respective focus on semiotic mediation and speech as a cultural tool or human activity systems. Both theories attempt to provide a nondualist account of the social, cultural, and historical factors that influence human development. This has important pedagogic implications for considerations of the processes and possibilities of teaching and learning.

Keywords

Vygotsky · Emotion · Dialectics · Inclusion · Potential · Social situation of development · Zone of proximal development · Mediation · Sociocultural · Cultural historical activity theory · Child and adolescent development · Imagination

Introduction

The possible, in educational terms, suggests the pedagogical potential of schooling to help children and young persons to change their perceptions about their imagined worlds of the future. It also highlights the possibilities for learning and development for all. Yet international evidence suggests that the potentials of many young people from economically and socially disadvantaged backgrounds and/or with a special educational need or disability (SEND) are not currently met by many school systems. In addressing these issues, there is a considerable body of educational research in the fields of inclusion, social justice,

and child and adolescent development that draws on the theoretical body of work developed by the Soviet psychologist Lev Vygotsky. Most of these studies draw on either sociocultural or cultural-historical activity theory, both of which can be traced back to Vygotsky's work in trying to provide "an account of learning and development as mediated processes" (Daniels 2005, p. 6) with a respective focus on semiotic mediation and speech as a cultural tool or human activity systems. Both theories attempt to provide a nondualist account of the social, cultural, and historical factors that influence human development. As Daniels (2005) points out, this mediational account avoids "determinism in that they both acknowledges that in the course of their own development human beings also actively shape the very forces that are active in shaping them" (6). This has important pedagogic implications for considerations of the processes and possibilities of teaching and learning.

Vygotsky produced an extraordinary body of work for someone who was only active as a researcher and psychologist between 1924 and 1938. This chapter will briefly place Vygotsky's psychology in context and then address some of these key insights from Vygotsky's revolutionary psychology and the implications for the possible in education. In particular, attention is focused on: Vygotsky's educational psychology on the development of mind in society; the concepts of the zone of proximal development and the social situation of development; and the relationships between the affective, imagination, and cognition.

Vygotsky's Psychology in Context

Vygotsky sought in his research to understand the development of mind in society (Daniels 2017; Kozulin 1999; Van der Veer 2014). One of Vygotsky's (1987) theoretical insights is that the development of mind involves mediated activity through psychological tool usage and in particular the culturally acquired conceptual tool of language. For Vygotsky (1987), learning leads development. Both learning and development are

mediated through interactions with other people and through the social and cultural acquisition of sign systems. In Vygotsky's view, individuals are both active agents in their development and shaped by contexts and available tools. In order to understand the revolutionary implications of this nondualist position for educational psychology, it is useful to briefly place his work in its historical and cultural social context.

Vygotsky's development as a psychologist and researcher took place in the contexts of the turmoil facing postrevolutionary Russia with the pressures of civil war and his own struggle against the effects of tuberculosis that led to his death in 1934. Vygotsky began his systematic work in professional psychology in Russia in 1924 at the age of 28 having previously been a student of law, literature, philosophy, and clinical psychology and both a secondary school teacher and college lecturer (Holzman and Newman 1993). Vygotsky also became personally involved in trying to provide education for those displaced by the First World War and the civil war that followed the October Revolution. For example, Vygotsky taught evening classes to laborers and later helped to found the Institute of Defectology in Moscow. Vygotsky was appointed to work in the People's Commissariat for Public Education with the remit of developing a state system to educate children with special needs or who were homeless and who had been "pedagogically neglected" (Yaroshevsky 1989, p. 96). Vygotsky's response was to attempt to develop a Marxist theory of human development that had pedagogical implications for all learners.

However, Vygotsky's theoretical insistence on the potentially agentic role of individuals within society placed him at odds with the increasing dominance of Stalinist deterministic orthodoxy. It is no accident that Vygotsky's works were largely suppressed in Russia after his death and his writing did not become well-known in the West until the 1970s. Translations of Vygotsky's texts into English and other languages remain contested over questions of accuracy of both meaning and text composition. Yet Vygotsky's work continues to exert important influence

particularly in the fields of child development and education because of its focus on potential and possibilities.

Vygotsky's Educational Psychology

Vygotsky sought a unified approach to understanding the development and uses of higher psychological processes. Vygotsky (1987, 1993) explicitly argued against the notion that child development is the result of a gradual acquisition of unitary changes. Instead, development involves a complex dialectical process involving the interaction of internal and external factors as the child learns to overcome difficulties. Vygotsky argues that human consciousness is achieved by the internalization of shared social behavior. In educational terms, this suggests that the organization of learning in the classroom needs to take account of the cultural and social contexts that shape a child's development and the mediating role of teachers, peers, and cultural artifacts in that transformation. Wartofsky (1979) defines artifacts as things that humans create in three distinct areas: primary artifacts (words, writing instruments, etc.), secondary artifacts (beliefs, norms, etc.), and tertiary artifacts (imagined worlds, play, creative representations, etc.).

Vygotsky sought to establish a theoretical framework that viewed the mechanism of individual psychological development (behavior and consciousness) as being rooted in the society and culture that a person lives in and in terms applicable to natural sciences. Education is not simply a question of accumulating knowledge but of developing students' ability to think independently and through social interaction. The point to stress here is that cognitive development is neither simply determined by external forces nor limited by perceived fixed levels of cognitive ability. On the contrary, development is possible for all but only in the context of social environments that challenge and develop conceptual thought. Social context therefore is crucial to an understanding of human development as it is both through interaction with other people and our response to our material conditions that we learn to make sense of the world.

A major theme of Vygotsky's theoretical framework is that social interaction and cultural context play a fundamental role in the development of cognition. The development of higher order functions such as voluntary attention, memory, and concept formation is first culturally acquired through interaction with others and then internalized as thought. In addition, Vygotsky's theory attempts to explain consciousness as the end product of socialization. For example, in the learning of language, our first utterances with peers or adults are for the purpose of communication, but once mastered they become internalized and foster inner speech. Symbolic activity has a specific organizing function that is linked to the process of tool use in a child and produces fundamentally new forms of behavior. For instance, small children solve practical problems with the help of their speech, as well as their eyes and hands. The relative amount of egocentric speech, the transitional form between external and internal speech, increases in relation to the difficulty of the child's task. A significant moment in the course of intellectual development of the human occurs when speech and practical activity converge. This gives birth to the specifically human forms of practical and abstract intelligence of the ability to use and manipulate both tools and speech.

Vygotsky (1987) points out that sign using activity in children is neither simply invented by the child nor passed down by adults but involves the child going through a complex set of mediated activities that help to develop higher psychological processes. The history of the sign in humans (e.g., use of tools and human speech) is that they are transitional systems that lie between the biologically given and the culturally acquired. This is why Vygotsky places childhood and adolescence at the center of the history of cultural development. As children develop physically, they acquire through social interaction the intellectual ability to use the fundamentally human sign system of language which in turn enables them to transform their surroundings. While these two forms of tool usage are qualitatively different, they nevertheless overlap and together produce new forms of human behavior. Vygotsky (1987)

argues that signs have both communicative and intellectual functions. As signs become speech, they become the psychological tools of higher mental processes such as abstract thought. Here, Vygotsky does not crudely equate language with thought but explains the complex process by which the two intertwine during a child's development when thought is verbalized and speech becomes intellectual. He distinguishes four phases in this development.

1. Where speech and intellect develop separately and on a primitive level
2. When the child begins to master basic problem-solving and speech develops syntactically but may not be used accurately
3. When problem-solving is aided by the control of egocentric speech and symbolic representation
4. When the child then internalizes thought both intellectually and verbally through inner speech

Egocentric speech and symbolic representation imply an audience, or other, and it is through the mediated negotiation of meaning with this other that the child develops thought processes. The use of word images or symbols requires a degree of analytical control as the child must organize sounds into words and words into sentences to create meaning as opposed to the spontaneity of oral speech. Vygotsky in this theory broke from the existing view that saw cognition and language as readily formed in the structure of the brain. As language and thought have developmental functions, context has a formative role. It matters where and how we learn as well as who we learn from.

Although many cognitive developments take place in early childhood, Vygotsky argued that other higher-order psychological processes, such as concept formation, only emerge at secondary school age. This provides the theoretical basis for learning in the secondary school. If for the adolescent the process of recall means to think or conceptualize, then curriculum design needs to provide opportunities for this process to occur through a process of dialogue between teacher

and pupil or between the student and peers that builds on the previous experience of the pupil. The development of thought, rather than the handing over of specific knowledge, is where real educational learning takes place. Vygotsky argued that school learning introduces something fundamentally new into students' development. Vygotsky saw the importance of children's learning of scientific concepts not as ends in themselves or the highest forms of knowledge but as the acquisition of tools for argumentation and understanding of the world around them. By giving students specific tasks of understanding scientific concepts within a designed environment, school learning introduces new concepts that can, in turn, stimulate psychological development. It is within the dialectical interplay between the students' grasp of everyday or spontaneous concepts and the development of their scientific conceptual understanding that learning leads development. However, simply giving students tasks or allowing them to communicate does not guarantee learning, particularly for those students who are most resistant because of previously negative experiences. While learners' needs must determine classroom activity, it is through appropriately structured activity that students learn. As Derry (2008) points out, the learning environment has to be designed according to a clearly-designed conceptual framework of learning if the possible is to be realized.

The Zone of Proximal Development

The Zone of Proximal Development (ZPD) is perhaps both the best known and perhaps least understood concept in Vygotsky's thought. Unlike the predominant model of children's learning that sees the function of learning as acquisition of knowledge, Vygotsky's theory of the ZPD stresses the importance of the educative process in the psychological development of higher-order thinking. For Vygotsky, the ZPD is the difference between existing and potential levels of development revealed through an analysis of how far a student is able to master a task by themselves or with mediational help from another such as a

teacher or peer. This is a radically different position from theories that claim that intellect results from maturity alone. It also challenges the very notion of what constitutes intelligence from accepted views of levels of acquired knowledge as indicators of potential toward an understanding of the importance of the processes and development of cognitive thought.

In his writings, Vygotsky variously viewed the ZPD as a tool for both academic and psychological assessment that could lead to the development of mental processes through mediated activity (Wertsch 1985). As Chaiklin (2003) has argued, Vygotsky's concept of the ZPD defines the potential *development* of a child rather than an abstract metaphor for learning. For Vygotsky, real learning is that which is in advance of development and is mediated through interactions with other people and through the social and cultural acquisition of sign systems. The ZPD indicates both the presence of maturing psychological functions and the possibility of meaningful interventions that can stimulate conceptual development. This process of conceptual development involves cooperation and collaboration between the teacher and the learner, or between learners at different levels of development. For Vygotsky, collaboration and cooperation are crucial features of effective teaching. Vygotsky (1987) argued that learning can take place when the learning task is set at a level in advance of the student's current mental level of development.

Unlike the predominant model of children's learning that sees the function of learning as acquisition of knowledge, Vygotsky's theory of the ZPD stresses the importance of the educative process rather than the final outcome. This has implications for the design of classroom activity concerning the relationship between instruction, students' development, and the classroom environment. In an educational context, cultural-historical activity theorists argue that while learners' needs must determine classroom activity it is through appropriately structured activity that pupils learn.

The ZPD indicates both the presence of maturing psychological functions and the possibilities of meaningful interventions that can stimulate

conceptual development. This process of conceptual development involves cooperation and collaboration between the teacher and the learner, or between learners at different levels of development. However, Vygotsky's emphasis in the concept of the ZPD was on individual children within social situations of development.

The Social Situation of Development

Vygotsky's (1998) concept of the social situation of development is characterized by changes in personality and consciousness of the social world at critical periods in child and adolescent development such as "when they begin to walk and talk, when they start to use conceptual thinking, and when they gain self-awareness during adolescence" (Mahn 2003, p. 120). Vygotsky (1993) argued that this development involves a series of crises as the learner encounters contradictions between their own psychological development and the demands of the learning situation. When there is a clash between the personal and social, there are possibilities for the young person, through interaction with others, to begin to envisage things in a new way. However, these social situations of development can lead to considerable frustration for the young person as well as a "drop in the rate of success, a slacking of interest in school work, and a general decline in capacity for work" (Vygotsky 1993, p. 191). At adolescence, this frustration can also lead to clashes with authority, or the perceptions of parents or schools, as the young person develops a more critical understanding of previously-accepted cultural and social norms.

Vygotsky (1993) argued that in moments of crisis within a particular social situation of development "the child can become relatively difficult due to the fact that... the pedagogical system applied to the child does not keep up with the rapid changes in their personality (193–194)." These moments of crisis are both personal to the particular need and history of each young person but also socially experienced and mediated by interaction with others. Moreover, the key to development lies in the ability of an individual

to perceive the limitations of the situation they are in and to reimagine a different identity that allows them to function and thrive in social situations (Holland et al. 1998).

Imagination, Cognition, and Emotion

Vygotsky (1993) identified children and young people's emotional experiences, or their affective relationship to their environment, as a key unit of analysis for an understanding of their development. This has particular resonance for the possible in education for all children and young people but particularly for those from disadvantaged traumatic backgrounds or with SEBD. There is increasing awareness of mental health issues for many adolescents, particularly anxiety and depression that increase the risk of social isolation and difficulties in schooling. These fears are heightened by the social and emotional effects of school closures during the Covid-19 pandemic. At schools, teachers and parents debate the future of schooling post-Covid-19, issues of well-being become as important as academic attainment. Vygotsky's argument, in terms of future possibilities, is that these are not separate issues.

Yaroshevsky (1989) points out that Vygotsky perceived imagination, cognition, and emotion as being closely interrelated. He argued that imagination in adolescence is the successor of children's play and plays a key role in development. Imagination, invoked through the social situation of play and mediated through interaction with others, can help a young person to change their perceptions about the imagined worlds of the future. Engeström (2009), from the perspective of cultural historical activity theory, argues that analyzing emotional experiences can be a means of understanding "object-related motives that are difficult to access and explicate consciously" (308). This points to the importance of Vygotsky's theoretical framework for understanding the possible. Bozhovich (2009) explains that what "underlies complex and diverse emotional experiences—internally conflicting or ambivalent emotions—is a complex structure of diverse needs and impulses, diverse motivational

tendencies” (71). This is particularly true of young people with SEBD. Vygotsky (1991) explains that “imagination in adolescence is, from the developmental point of view, the successor of children’s play” (77). Imagination, invoked through the social situation of play and mediated through interaction with others, can help a young person to change their perceptions about the imagined worlds of the future. As Smagorinsky (2011) argues, Vygotsky’s “relation of imagination, emotion, and cognition suggests that people’s capacity to project a trajectory for themselves is culturally mediated. It is important to understand, then, the kinds of mediation that provide both the emotional foundation and cultural sense of propriety for their trajectories, and the sorts of mediation that potentially limit conceptions of trajectory” (339).

Within schools, the remedy offered to those who struggle to engage with an academic curriculum has traditionally been to offer more of what has failed in the first place, particularly in the areas of literacy and mathematics. However, there is a growing recognition that emotion and imagination are central aspects in the development both in very young children and in adolescence. Research has shown that arts-based interventions can be effective for some young people in certain circumstances (e.g., Thompson, 2015; Thompson and Tawell 2017) and that arts participation and creativity are potentially important foundations for well-rounded child and adolescent development.

Evoking play through storytelling, drama, music, or a range of other artistic activities can help young people’s ability to self-regulate, empathize with others, and work collaboratively. Arguably, developing these attributes is key to young people’s self-esteem and their ability, in turn, to tackle curriculum areas that they have found problematic.

Vygotsky’s theoretical conclusions on the links between effect and cognition have direct implications for pupils who struggle. Vygotsky (1993) and Luria (1981) specifically criticized schemes that isolate slow learners and teach mechanized learning programs because they fail to expose the child to abstract thought and focus exclusively on concrete thinking. Vygotsky emphasizes that

education for all children is a social process where dialogue and the language of instruction should be designed to stimulate internal developmental processes needed for future learning. The assimilation of a word or the mastery of arithmetic operations is not the end of the developmental process but the basis for development of complex thought processes.

Vygotsky’s insistence on the importance of play in mental development suggests that the classroom environment itself needs to be addressed. However, there is a marked difference between the play of a preschool child and that of the adolescent in school where play is mediated through systems of school instruction and rules. The important point for Vygotsky is that play does not disappear in adolescence, but rather that imagination influences attitudes toward reality. The role of play, or of the process of a child engaging with a concept through apparently abstract activity, remains of paramount importance. Imagination (play) arises from action. Vygotsky argues that while there is no such thing as play without socially constructed rules the central attribute of play is a rule that has become a desire. Play gives a child new forms of desires and motives so creating possibilities for both emotional and cognitive development. School instruction can mediate this process by introducing new methodologies to the child that stimulate abstract thought through the social context of playing with and manipulating the stimulus provided.

Summary

Vygotsky’s educational psychology hints at the developmental possibilities of education. Vygotsky conceived learning as both a social and situated cultural activity. For Vygotsky, real learning is that which is in advance of development and is mediated through interactions with other people and through the social and cultural acquisition of sign systems. This theoretical framework views individual psychological development as being rooted in culture and society (the social situation of development). It is both through interaction with others and our response to the contexts within which we develop that we

attempt to make sense of the world around us. Learning involves mediated activity through psychological tool usage and in particular the culturally acquired conceptual tool of language.

The ZPD indicates both the presence of maturing psychological functions and the possibility of meaningful interventions that can stimulate conceptual development. This process of conceptual development involves cooperation and collaboration between the teacher and the learner, or between learners at different levels of development. Vygotsky argued that school learning introduces scientific concepts within a designed environment can help to stimulate psychological development. It is within the dialectical interplay between the students' grasp of everyday spontaneous concepts and the development of their scientific conceptual understanding that learning leads development. Vygotsky identified emotional experience, or the young person's affective relationship to their environment, as the key unit of analysis for an understanding of this development. It matters both who we learn from and with as well as how and where we learn and in what social, cultural, and historical context. For Vygotsky, imagination, cognition, and emotion are closely interrelated. This has implications concerning the relationship between instruction, students' development, and the classroom environment. Learning must also involve risk and uncertainty if young people are to learn through their engagement with social situations of development. In this sense, the cultures of institutions that resist pressures of performativity are key to potential development of marginalized learners. The challenge for educators is to find ways to reinvigorate the imaginations of young people that are essential for their social, emotional, and cognitive development.

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The Possible in the Life and Work of Ludwig Wittgenstein

Pedro Karczmarczyk

National University of La Plata/ National Council of Scientific and Technological Research (CONICET), La Plata, Argentina

Abstract

Wittgenstein's philosophy is developed in two different stages. However, his conception of the nature and goals of philosophy reflects no change in essence: he denies there are genuine philosophical problems, and hence, philosophical knowledge. When a certain philosophy is presented as a body of knowledge or questions, as happens in traditional philosophy, Wittgensteinian philosophy shows there is a confusion at the ground. Traditional assertive philosophy can be seen as an "illness" or "disease" and Wittgensteinian philosophy as a peculiar activity, as a "therapy." Therapeutic philosophy relies on a diagnosis of the source of philosophical problems, which arise because the logic of language is not clearly understood. Changes in Wittgenstein's philosophy depend on developments in Wittgenstein's own understanding of the logic of language. In *Tractatus Logico-Philosophicus* (1921), elucidation of meaningful language has its core in the bipolarity of propositions (its necessarily true or false character). This starting point leads to the notion of a "logical space" (all possible "states of affairs") and to the crucial notion of a "logical form" shared by all meaningful language. *Philosophical Investigations* (1953), on the contrary, starts from the many different actual uses of language and offers a much broader conception of meaning. Wittgenstein's main concept in this work is "language game." As he has previously shown for games, neither do language games rest on an underlying essence below the multiplicity of particular linguistic activities. Languages games relate to each

other by way of a complicated network of similarities and differences, among which are "family resemblances." Wittgenstein develops this entirely new conception on the basis of a critique of his previous view, also implying a new understanding on logic and possibilities.

Keywords

Logical form · Language game · Language-games · Grammar

Introduction

Ludwig Wittgenstein was born in Vienna in 1889, the last child of a wealthy and cultured family. The house of the Wittgensteins was a center for artistic life, which strongly influenced the young Ludwig with the cultural atmosphere of "*fin de siècle*" Vienna. Wittgenstein started to study Engineering in Berlin in 1906, moving to Manchester in 1908. He soon became captivated by the problem of the foundations of mathematics as presented in the work of Frege and Russell. In 1912, following Frege's advice, Wittgenstein went to Cambridge to study with Russell. In 1913, he went to Norway to develop his ideas in solitude. With the outbreak of World War I, he returned to Vienna and joined the Austrian Army. As a soldier, Wittgenstein managed to continue working on what was to become his *Tractatus Logico-Philosophicus*. In 1918, while being held prisoner, he was able to send Russell his manuscript, which was eventually published in 1921 in German, and translated into English in 1922.

The book was very influential, both because of its acute criticisms of Frege and Russell and its reception in the "Vienna Circle," although Wittgenstein's inspiration and goals differed widely from those of logical positivists' (see Lecourt 1981, pp. 141 ff.). Convinced that his *Tractatus* had solved the basic problems of philosophy, he abandoned philosophy and devoted himself to several different jobs (rural elementary teaching, gardening at a monastery, architecture). By the end of the 1920s, and because of his discussions with young English mathematician

Frank Ramsey and some members of the Vienna Circle, he became unsure of some aspects of the solution proposed in the *Tractatus*. He therefore returned to Cambridge in 1929, where was also influenced by Marxist economist Piero Sraffa, and thus, what was originally intended to be a modification of some aspects of the *Tractatus* became a radical rethinking and strong criticism of his former views. As a result, he produced a fundamentally different outlook, the major expression of which is found in his *Philosophical Investigations*, published posthumously in 1953.

Tractatus Logico-Philosophicus

The Preface to *Tractatus* opens with a consideration concerning the possible, which concerns the limit of thought. Can we separate what is thinkable from what cannot be thought? If that were to be done directly, trying to think the unthinkable or the impossible, the result would be an obvious contradiction. Wittgenstein then traces the limit indirectly, exploring the limit to the expression of thoughts, in other words, of language. In this way, “what lies on the other side of the limit will simply be nonsense.” (Wittgenstein 2001, p. 4).

Drawing the limit indirectly differs from doing so directly because what is involved when a sentence is called nonsense is not like the paradoxical discovery of a sense that has the property of being senseless. That would replicate the difficulty at semantic level. When a sentence is referred to as nonsense, the sentence is still an ordinary fact in the world (a chain of words) that does not have a sense attached to it because it violates the immanent legality of language. For instance, the sentence “The pencil is friendly” is not a proposition, it is simply nonsense.

Now, in order to recognize that a chain of words is nonsense, it is necessary to be acquainted with language. Based on this acquaintance, given a proposition, it cannot be known in advance whether it is true or false, but there is no doubt as to what is required for the proposition to be true. Given the proposition “The pencil is blue,” it is not possible to know *a priori* whether this is true or false, but in contrast, there are no doubts as to

the fact that would make the proposition true. The proposition is a picture (*Bild*) of a fact, and while, by looking at the picture (proposition), we cannot tell whether the pictured fact actually happens, we immediately understand what should happen for the picture to be true. Since this is clear, the proposition is bipolar: either this fact actually happens, and the proposition is true, or this fact does not happen, in which case the proposition is false.

All this means that the indirect drawing of the limit depends on a presupposition. The absence of doubts concerning the sense of a proposition, its bipolarity, allows us to draw the limit immanently, from inside the language, distinguishing propositions from senseless sentences. This presupposition can be clarified.

Wittgenstein starts the *Tractatus* with the proposition “The world is all that is the case.” (2001, prop. 1¹). He immediately commentates it: “The world is the totality of facts, not of things.” (2001, prop. 1.2). This commentary goes against intuition, but Wittgenstein states it to show that the bipolarity of propositions implies that every fact is contingent, that there are no necessary facts. But he believes also that the difference between sense and nonsense shows that every contingency is located within the framework of a fully determined set of possibilities.

This depends on the distinction between objects (things) and facts. Objects play a crucial role in the constitution of facts, but they are not facts. If objects were “the case,” if they were effectives, then their possibilities for combinations would be contingent. However, the difference between sense and nonsense shows that not all combinations of objects are possible. Our certainty concerning whether a sentence is nonsensical or a proposition shows that the possibilities as a whole are not contingent.

¹The *Tractatus* is organized into propositions where the decimal numbers indicate their importance. As Wittgenstein explains in a footnote: “The propositions *n.1*, *n.2*, *n.3*, etc. are comments on proposition no. *n*; the propositions *n.m1*, *n.m2*, etc. are comments on proposition no. *n.m*; and so on.” (2001, p. 5).

Wittgenstein explains that the world is divided into facts (2001, prop.1.2), each one mutually independent of the other (2001, prop. 1.21), and that a fact is the existence of “states of affairs” or “atomic facts” which are not composed of other states of affairs, but of a combination of objects. Objects do not exist by themselves, but only in combination with other objects, i.e., in states of affairs. It is possible to imagine an object in itself, for instance, a rod or a ball, as if it had an inner essence. But indeed, a thing or object cannot be imagined without thinking of its possibilities (and impossibilities) of combining with other objects. The rod can be leaning against the wall, but not the ball (Wittgenstein 1998a, p. 70). These possibilities and impossibilities are constituents of an object’s nature. An object’s nature is exhausted by its possibilities for connections to other objects to form states of affairs. Wittgenstein can thus metaphorically say: “Logic deals with every possibility and all possibilities are its facts” (2001, prop. 2.0121) (see entry “► Possible in Logic”).

The actual combination between objects, the existence of states of affairs, is contingent, but the possibility of combination, the state of affairs in itself, is not. Therefore, Wittgenstein thinks that given all the objects, the entirety of possibilities of states of affairs is also given. The totality of objects is the “substance” of all possible worlds (what remains unchanged below the changes) (see entry “► Possible Worlds”). Wittgenstein calls this “logical space.” Logical space “contains” all possible states of affairs. Indeed, logical space is not a container in which objects are located, because the relationship between objects and logical space is not external, as is that between the container and its content, but internal. The very structure of logical space depends on the objects that compound it.

This leads Wittgenstein to state that logical objects are not what would ordinarily be called objects (like a clock, a pencil, or a table) which are complex, because logical objects are simple. If they were not simple, then the bipolarity of a proposition would collapse and it would be impossible to make a picture of the world. What is involved here is the logical role of names. Names do not describe, and they only refer to

objects. But if a name could refer to a complex, then the sense of the proposition would be uncertain, because it would depend on the connection of the constituent parts of the complex referred to by the name, and this connection would be a contingent fact. Thus, the sense of a proposition would depend on whether another proposition was true. In order to sketch a picture of the world, it would be necessary to know what world is being referred to. For instance, if the expression “King of France” were the name of an object, the proposition “The King of France is bald” would have different senses in different possible worlds. It would have one sense in a world where there is a King of France, and it would be senseless in a world where there is not. Logical analysis shows that, in cases like this, superficial grammar does not correspond with the deep logical structure of the proposition, something that Russell pointed out before Wittgenstein. The analyzed structure of the above example would be roughly: “There is one and only one individual who is at the same time King and French, and he is bald.” where it is clear what the case should be, and which is false in the actual circumstances. To summarize, if objects were not simple, the world would not have the permanent form which makes it possible to describe it.

The conclusion that the actual combination between objects is contingent, but that the possibility of their combination is not, is the cornerstone of the *Tractatus*. It supports the pictorial theory of the proposition and its crucial concept of “logical form.” A picture is a fact which models another fact. A picture has two dimensions: (1) the “pictorial relationship,” which correlates elements of the picture with objects in the world (see 2001, props. 2.1513 and 2.1514) and (2) the “structure” of the picture, i.e., the connections among its elements, which depicts the way in which the elements in the depicted fact are displayed.

The pictorial relationship equates to the correlation between names and objects. But a picture must have something in common with the depicted fact, a structural similarity, and this is clarified by way of the concept of a “pictorial” or “representational” form. As Wittgenstein says: “A picture can depict any reality whose form it has. A

spatial picture can depict anything spatial, a colored one anything colored, etc.” (2001, prop. 2.171). For instance, a spatial picture (like a map) can depict the spatial relationship among the elements of the depicted fact (a territory).

In order to be able to represent something, a picture has to be a fact. Propositions, like any other picture, are facts. They are pictures because they establish a figurative relationship with the world, the names of propositions refer to simple objects, have them as their meaning (*Bedeutung*), and combine these names in a particular form that exhibits the putative relations of the objects in the fact depicted. But if a spatial picture shares a “pictorial form” with the special fact it depicts, it is clear that propositions do not share any concrete form of reality with their depicted facts. Nevertheless, because both proposition and depicted fact are facts in the logical space, they have in common at least the logical form of reality.

Just as a spatial picture uses the spatial relationship between its elements to show what the depicted fact is like, but cannot depict this spatial relationship, propositions show in their logical form what depicted facts are like, but cannot say anything about the logical form, other than simply showing it.

Elementary propositions that depict states of affairs combine to form molecular propositions. Molecular propositions are truth-functions of elementary propositions, that is to say, the truth of a molecular proposition depends exclusively on the value of the elementary propositions integrating it. This theory allows Wittgenstein to show that logical constants (quantifiers and connectives) are not the names of logical objects but truth-functional operations of elementary propositions.

Although elementary propositions are always contingent, there are some special cases of truth-functional molecular results which are not contingent. This is the case of propositions in logic. Propositions like “It is raining or not raining” are necessarily true because of their structure, they are tautologies. Tautologies such as this example that say nothing about the weather say nothing in general about the world. Nevertheless, they show something about it, its logical form: a proposition that excludes nothing is senseless.

Contradictions which exclude all possibilities are also senseless.

The general form of the proposition is things are thus-and-so (see Wittgenstein 2001, prop. 4.5, and 2009, § 134; all references preceded by “§” are taken from Part I of *Philosophical Investigations*). Tautologies and contradictions show the limits of the logical form of the proposition. Tautologies and contradictions respectively expand and restrict the “thus-and-so” of a proposition excessively, and consequently cancel out the essential bipolarity on which logical form depends. However, they are not nonsense, because they do not violate any of the rules of language. In contrast, metaphysical propositions are, in effect, nonsensical; they try to state what necessarily has to be (for instance, that a semiquaver is a sound and cannot have weight). They try to describe the relationship between language and world as if it were a fact, thus contravening logical form and producing nonsense. What metaphysical propositions try to say cannot be said, it can only be *shown* by genuine propositions (that exhibit that the name “semiquaver” can combine with some names and not with others).

Although it has some similarities with it, Wittgenstein’s *Tractatus* philosophy is not a transcendental philosophy. At best, it can be seen, following an idea by Habermas, as non-affirmative transcendental philosophy (see Habermas 1982, p. 246). Transcendental philosophy consists of two movements. On the one hand, starting with something given as certain, it performs a regressive movement to its conditions of possibility. On the other hand, it tries to show how these conditions can be rationally justified. In Kant’s philosophy, we are told that we should not only think in terms of causality, as a question of fact, as if it were a sort of psychological compulsion, but that we are entitled to do so, because objects of knowledge actually have causes (see Stroud 1968). In other words, transcendental philosophy offers a legitimating condition of possibility. “Non-affirmative transcendental philosophy,” in contrast, does something like the first movement, elucidating what is entailed in the bipolarity of proposition, but avoids the second, legitimating movement. Indeed, it does not

“refuse” the second movement, but shows that it is impossible, that it is not a real option, that it only appears to be necessary because of confusion. In the *Tractatus*, the distinction between saying and showing renders the metalanguage in which the legitimating conclusion should be formulated impossible. In the penultimate remark of the book Wittgenstein reflects on this point using a simile: “My propositions serve as elucidations in the following way: anyone who understands me eventually recognizes them as nonsensical, when he has used them—as steps—to climb up beyond them. (He must, so to speak, throw away the ladder after he has climbed up it.) He must transcend these propositions, and then he will see the world aright.” (2001, prop. 6.54).

Philosophical Investigations

In *Philosophical Investigations*, Wittgenstein again does not conceive philosophy as a piece of doctrine but as a form of therapy. The best way of introducing later Wittgenstein ideas is to consider the particular illness *Philosophical Investigations* has to deal with, which is what remains of traditional philosophy in his previous views.

Philosophical Investigations does not take philosophical confusion as relating to one or another individual philosopher. Instead, Wittgenstein focuses on what he calls “pictures” (*Bilden*). Pictures condense orientations to raise questions and the kind of answers accepted as satisfactory. As rough conceptual devices, pictures can be refined in different ways. Hence, Frege’s semantic theory and the logical atomism of Russell and Wittgenstein can be seen as sophisticated developments of the Augustinian picture (see Glock 1996, pp. 41–45). However, when the inadequacy of a picture is perceived, we cease to be dominated by the temptation of refining it. Put differently, a picture establishes the way in which things “must or have to be” (see Wittgenstein 2009, § 66) in such a way that while we are captivated under their spell, the picture’s difficulties and flaws seem simply to be minor puzzles to be resolved in ways predetermined by the very same picture.

Philosophical Investigations opens with a fragment of the Augustinian *Confessions*, which presents one of these pictures. There, Augustine remembers his own acquisition of language. Augustine’s recollections summon a picture of how language works and what it is for words to have meaning. Wittgenstein sums this picture up in this way: “These words, it seems to me, give us a particular picture of the essence of human language. It is this: the individual words in language name objects – sentences are combinations of such names. In this picture of language, we find the roots of the following idea: Every word has a meaning. This meaning is correlated with the word. It is the object for which the word stands.” (2009, § 1).

According to Augustine, semantic understanding would consist of grasping the right connection between things and words, in such a way that, once the understanding is achieved (the grasping of the connection) the learning difficulty would be merely practical, external to understanding: getting accustomed to adequately pronouncing the sounds required for social interaction. Then, understanding and action are thought of as being conceptually detachable or externally related, bearing a contingent relationship to one another.

The Wittgensteinian analysis combines two movements. On the one hand, a movement of interrelated *diagnosis* and *criticism*, where Wittgenstein tries to find the source from which the picture emerges and becomes plausible (diagnosis) and to undermine the picture’s plausibility by pointing at its ensuing absurd consequences (criticism). On the other hand, there is a moment of *reconstruction* or *grammatical elucidation*, in which Wittgenstein tries to help whoever is captivated by a picture to become aware of what of what they already know, pointing out that when they try to represent this “already possessed knowledge,” they reveal they are unaware of it in a certain sense (see 2009, § 89).

The Augustinian picture tries to cope with a peculiar feature of our linguistic behavior already recognized in the *Tractatus*: *we usually have no doubts concerning the meaning of our expressions*. In traditional philosophical terms, what we are dealing with here is the classical distinction

between the *a priori* character of semantic questions and the *a posteriori* character of factual questions. Consequently, a number of philosophers have assumed that their central tenet was to provide an account of the *a priori* character of meaning and understanding. The ordinary philosophical way of accounting for this difference was by providing a justificatory ontology. This should provide a domain of meaning (ideas, concepts, mental images, objects, etc.) to guide and justify the speaker's actions. This would endow speakers with a certain knowledge, the nature of which is expressed in the *a priori* character of the understanding or "knowledge of meaning."

Later Wittgenstein realizes that in the *Tractatus*, this strategy could not be entirely avoided. The paradoxically rhetorical structure of the book, with its concluding metaphor of the ladder, prevented it being taken as a philosophical justification of language understanding. But it still remained too concerned with philosophical strategy, attempting to develop an ontology emerging from a feature of our ordinary practice. When later Wittgenstein says "don't think, but look!" (2009 § 66), he is no doubt thinking of the *Tractatus* strategy.

Wittgenstein then attacks the core of the Augustinian picture: the strong inclination to consider that understanding of language happens apart from actions. The application – the material actions performed by individuals in language games – would derive from something like ideas and mental states. On the one hand, Wittgenstein shows that these "ontologies of understanding," *are not sufficient conditions of understanding*. That is to say, the putative "ontology of understanding X" (e.g., mental states) can occur in any particular situation without this being a case of understanding X. On the other hand, Wittgenstein shows that the putative states (or acts) of understanding *are not necessary conditions either*, i.e., the underlying ontology can be absent and the case can nevertheless be a genuine case of understanding (see 2009 §§ 33–34, 73–74, 139–140).

What makes the Augustinian picture untenable is that it necessarily generates a duplicity of criteria for understating (mental states and applications) in potential contradiction with each other.

If the state identified at the beginning as the understanding of, for instance, "cube," (e.g., the "coming of the picture of a cube before our minds" see 2009 § 139) gives way to an application that contradicts the identification we have made (e.g., its application to a triangular prism), shall we continue to say that this is the state of understanding such and such? Wittgenstein's answer is clear: application is the basic criterion of understanding: "What is essential is to see that the same thing can come before our minds when we hear the word and the application still be different. Has it the same meaning both times? I think we shall say not" (2009, § 140).

Moreover, Wittgenstein's insistence on application as the main criterion of understanding implies a further consequence: we attribute understanding through agreement in judgments. The Wittgensteinian approach opens up some questions. On the one hand, insistence on the need for agreement on judgments seems to abolish the internal relationships of the link between the rule (the meaning) and its cases (its applications). For instance, when developing the series of even numbers, the correlation between 1002 as following on from 1001 is not a contingent relationship; it is not a question of observing the behavior of some others in the community to see whether they agree or not that 1002 follows on from 1001. Nevertheless, this seems to be a consequence of Wittgenstein's approach, as he himself recognizes in 2009, § 242: "If language is to be a means of communication there must be agreement not only in definitions but also (queer as this may sound) in judgments. This seems to abolish logic, but does not do so."

To clarify this point, we need to pay attention to an apparently paradoxical feature of Wittgenstein's way of exposition: the fact that his arguments collide with incredulity every time the text speaks in the first person. Because of this, the same arguments have to be presented over and over again (namely ostensive explanations, mathematical series, the relationship between will and actions, seeing aspects of a thing, etc.). It is worth mentioning here that the rhetorical articulation of *Philosophical Investigations* has been compared by K. T. Fann to a "confession." This means that

the entire work is dominated by a dialogue between the voices of “temptation,” which appears characteristically in the first person, and the voice of “correction” addressing it (see Fann 1969, pp. 106–107; Cavell 2002, pp. 70–71).

The “voice of temptation” characteristically points out that s/he understands merely by herself, without appealing to reminders of actual applications and independently of applications by others of the algebraic formula. The “voice of correction” shows that nothing can justify this certainty. The dialogue develops in this essential tension. There is a reason for this: the voice of temptation, besides its lack of justification as a theoretical vision, positively exhibits one of the constitutive requirements that makes someone a speaker of a language, without which what we know as language would cease to exist. The “voice of temptation,” though unjustified from a theoretical point of view, is not wrong from a practical standpoint (“To use a word without a justification (*Rechtfertigung*) does not mean to use it without right (*Unrecht*)” 2009, § 289).

Wittgenstein further developed this aspect by asking himself whether the persistent need for advancing the same kind of arguments due to the untiring capacity of the Augustinian view being reformulated, is not, in some way, part of the solution of the puzzle. According to Rush Rhees, in the “Preface” of *Brown and Blue Books*, this was what caused the development of *Philosophical Investigations*. Wittgenstein had already put forward the conception of thinking as “operating with signs” (Wittgenstein 1998b, p. 6, 15) in the *Blue Book* (1933–1934). But Wittgenstein’s uneasiness with this conception was growing and led him to consider issues such as “aspect-seeing,” “meaning and color blindness,” and “tone-deafness.” The point involved is: “does the perception of meaning fall outside the use of language?” (Wittgenstein 1998b, p. xiv). To assign a grammatical place to the perception of meaning is crucial because: “So long as there are such difficulties, people will still think that there must be something like an interpretation. They will still think that if it is language then it must mean something to me” (Wittgenstein 1998b, p. xiv).

The “voice of correction” shows that the “absence of doubts” concerning meaning cannot be justified. Consequently, first person findings of unity and necessity, which seems to warrant the performance of the speaker, are only of an imaginary character. But it does not mean that they could be abandoned as a mere illusion. Quite the contrary, the subjective certainty expressed by the “voice of temptation” is a primitive and necessary datum of Wittgenstein’s grammatical elucidation. This imaginary relationship between speakers and their conditions of existence as such (i.e., with the whole practice of the language games) is basically constitutive of their condition as “speakers.”

In a pedagogical relationship, for instance, understanding is attributed on the basis of the agreement between the pupil’s answers with those the teacher is inclined to give. The attribution of a statement like “S/he understands X” functions as a “rite of passage” (similar to the rite of passage from puberty to adulthood), by way of which the pupil receives a new social status. Now, one of the conditions the teacher will pay attention to when making a statement such as “The pupil understands X” is the student’s practical certainty in solving the tests s/he is submitted to. In other words, the absence of doubts and hesitations works as a criterion for the teacher when attributing understanding to her pupil.

Once the status of a particular understanding is granted, as in the case of the teacher, or of the pupil once s/he passes the tests s/he is submitted to, the individual is allowed to take as correct the answers s/he feels secure in giving without any further justification other than this confidence. Despite this authorization, s/he can still be corrected by others.

Conceived in this way, communitarian agreement differs from its usual understanding in American pragmatism (see entry “► [American Pragmatism](#)”). Agreement in judgments does not abolish logic because it offers no communitarian guarantee for a given practice or language game. Social agreement only implies that in practice the occasion for attributing disagreement is not actually activated. Social agreement, so understood, is tantamount to stressing that criteria are immanent

to different practices or language-games, logic included.

Cross-References

- [American Pragmatism](#)
- [Possible in Logic](#)
- [Possible Worlds](#)

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The Possible in the Life and Work of Mikhail M. Bakhtin

Eugene Matusov
School of Education, University of Delaware,
Newark, DE, USA

Keywords

Dialogism · Theoriticism · Alibi-in-being ·
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Russian philosopher of dialogism, responsible deed (postupok), and carnival, Mikhail M. Bakhtin

(November 4 (16), 1895, Oryol, The Russian Empire – March 7, 1975, Moscow, the USSR) worked with the literary material of masterpieces by Dostoevsky, Rabelais, Goethe, Gogol, and so on. Bakhtin did not directly introduce the notion of the possible in his writings. However, the terms “possible,” “possibility,” or “impossible” in many of their variations were highly used by Bakhtin throughout of his writings. Some, or, maybe, even the most, of these uses were mere functional, reflecting a way of articulating his ideas or a way of talking. However, others apparently represent important philosophical conceptualization, which I want to discuss in this essay.

I have abstracted five distinct philosophical conceptualizations of the notion of “the possible” in Bakhtin's work. The first one is purely negative, “the empty of responsibility possible,” as a form of “theoriticism” criticized by Bakhtin (1993) in his early treatise, tentatively called “Toward a philosophy of the deed [postupok]” by his disciples, which the original beginning, the ending, and the title did not survive. I call his second and third conceptualizations as “the tasked possible” and “the given possible” that Bakhtin (1990) developed as positive concepts in his second early treatise “Author and hero in aesthetic activity.” In his later writings, especially in his book on Dostoevsky (Bakhtin 1999), Bakhtin rethought and criticized the concept of *the given possible* as more negative notion, although he never completely dismissed it and even accepted it as limitedly useful (see Bakhtin 1986), as I will discuss later. At the same time, he introduced the fourth conceptualization of the possible: initially, vaguely, and even negatively for aesthetic as “new possibilities” or unfinalized possibilities (Bakhtin 1990) and then rethought as positive and more defined within his new framework of dialogism in his book on Dostoevsky (Bakhtin 1999). I called this conceptualization “the dialogic possible.” Finally, I sense another conceptualization of the possible in Bakhtin's writing on Dostoevsky – arguably this notion was probably more Dostoevskian than Bakhtinian in its origin. I call this possible “the everything possible” referring to manipulative making the reality according to

one's wishes. Together with Dostoevsky, Bakhtin implicitly criticized this notion.

I will argue that Bakhtin's major contribution to the philosophical conceptualization of the possible is in articulation of *the dialogic possible* and discussing how *the given possible* might contribute to it. I think his secondary contribution was his critique of *the given possible*, *the everything possible*, and *the empty of responsibility possible* as totalizing concepts that ubiquitously emerged in the modernity.

The Empty of Responsibility Possible

In his first treatise, Bakhtin focused on developing philosophy of the responsible deed (*postupok*). The responsible deed actualizes a person's all thoughts, intentions, relationships, and considerations in a unique and final act within a unique context of the world necessities and acts of other people. What makes the deed responsible is that the person accepts and willingly addresses all questions challenging this deed – its intentions, justifications, values, and intended and unintended consequences – raised by others and the self. The responsible deed realizes all subjective and objective hypothetically possible into unique reality, unchangeable any more as things have already happened, for which the person takes responsibility:

The answerable [responsible]. . . deed alone surmounts anything hypothetical, for the answerable [responsible] . . . [deed] is, after all, the actualization of a decision-inescapably, irremediably, and irrevocably. The answerably [responsibly acted out deed] is a final result or summation, an all-round definitive conclusion. The [acted out deed] concentrates, correlates, and resolves within a unitary and unique and, this time, *final context* both the sense and the fact, the universal and the individual, the real and the ideal, for everything enters into the composition of its answerable [responsible] motivation. **The [acted out deed] constitutes a going out once and for all from [the realm of] possibility . . . into [the uniqueness of] what is once-occurrent.** (Bakhtin 1993, pp. 28–29)¹

The emotional-volitional tone, encompassing and permeating once-occurrent being-as-event, is not a passive psychic reaction, but is a certain ought-to-be attitude of consciousness, an attitude that is morally valid and answerably active. This is an answerably conscious movement of consciousness, which **transforms possibility into the actuality of a realized deed (a deed of thinking, of feeling, of desiring, etc.)**. (Bakhtin 1993, p. 37)

Bakhtin refers to a person's subjective and objective hypothetical possible as "an empty possibility" or "a passive possibility," "Any thought that is not correlated with myself as the one who is obligatively unique is merely a passive possibility" (Bakhtin 1993, p. 48). From his point of view, the possible is empty or passive because it does not obligate the person and thus cannot be a subject of a responsibility call. However terrible things a person thought, unless enacted into the obligatory world of the given, necessity, and uniqueness, this thought remains to the empty possibility, for which the person cannot be taken to be responsible. A thought possibility cannot be signed with the person's signature of personal responsibility – only a deed can.

An answerable act or deed is precisely that act which is performed on the basis of an acknowledgment of my obligative (ought-to-be) uniqueness. It is this affirmation of my non-alibi in Being that constitutes the basis of my life being actually and compellingly given *as well as* its being actually and compellingly projected as something yet- to-be-achieved. It is only **my non-alibi in Being that transforms an empty possibility into an actual answerable act or deed** (through an emotional-volitional referral to myself as the one who is active). (Bakhtin 1993, p. 42)

Of course, after the deed is enacted, a past thought possibility shaping this deed becomes a part of the deed, only now, of course, it stopped being just a possibility.

Bakhtin's notion of *the empty of responsibility possible* remains the legal recognition of the freedom of speech in contrast to the freedom of action in democratic societies. In democratic societies, people are exonerated from any legal responsibility for what they say (i.e., *the empty of responsibility possible*) but not for what they act (i.e., deed). Like a thought of a possibility can realize itself in a deed and thus becomes a subject of responsibility

¹ Here and further, in quotes of Bakhtin, the italics are original by the translator, and the bold is mine.

demand, similarly a word can realize itself in a deed and, thus, becomes liable in the face of the law.

Yet, in the treatise that his disciples called “Toward a philosophy of the deed (postupok),” Bakhtin depicted the notion of *the empty of responsibility possible* negatively. The non-obligatory life of *the empty of responsibility possible*, when things may exist or may not exist, is not rooted in anything. It creates an ethical loophole of avoiding any responsibility, an alibi in being. *The empty of responsibility possible* is a part of the irresponsible “theoriticism” that Bakhtin criticized throughout his treatise.

The Tasked Possible and the Given Possible

In his treatise, “Author and Hero in Aesthetic Activity” (1920–1923), which seems to be written in parallel with the treatise “Toward a philosophy of the deed” (1920–1924), Bakhtin had a completely opposite, positive, attitude toward the notion of the possible. This seems to suggest that his notion of *the empty of responsibility possible* should be seen only in the context of his overall inquiry and framework of the responsible deed.

The treatise, “Author and Hero in Aesthetic Activity,” introduced two related other notions of *the possible*, which I called “the tasked possible” and “the given possible.” These notions, rooted in the work of Kant (2004), seemed to be considered outside of Bakhtin’s notions of responsibility and responsible deed and within his discussion of life act and aesthetic act. *The tasked possible* constitutes an inner-subjective ethical emotional-volitional axiological spatial-temporal life horizon for the person.

The “distant homeland” is **located in the axiological spatial-temporal context** of the heroine’s life. It is for her, in her emotional-volitional tone, that **the possible spatial horizon** becomes a homeland: it is a moment in the event of her life. (Bakhtin 1990, p. 213)

The person lives in the world of *the tasked possible* where his/her dreams, goals, aspirations, expectations, envisioned opportunities, perceived risks, and so on constitute the fabric of making deeds

and participating consciousnesses. The inner world of the person is tasked, assigned [zadan, задан] in sense that it is perceived as task to be accomplished. It is future-oriented, the world of the open and unfinalized possible, always pregnant with unfolding and future deeds. With an apparent reference to Kant (see Vladimir Lyapunov’s comment 75 in Russian publication of the treatise in Bakhtin 2003, pp. 575–576), Bakhtin argued that a person is “the condition of possibility” for his/her own life, but a character of a story is seized being such a condition because the possible of the character becomes finalized (i.e., *the given possible*), while the possible of the person remains always unfinalized and open (i.e., *the tasked possible*) (Bakhtin 1990, p. 106).

There are two possible ways of combining the outside world with a human being: **from within a human being-as his horizon [i.e., *the tasked possible*], and from outside him-as his environment [*the given possible*]**. From within me myself [in my horizon], within the meaning-and-value context of my own life, an object *stands over against* me as the object of my own cognitive-ethical and practical) directedness in living my life; in this context, the object is a constituent of the unitary and unique *open* event of being, in which I partake as a participant who has an urgent ‘interest in the outcome of that event. From within my actual participation in the event of being, the outside world is the *horizon* of my active, act-performing [deed-making] consciousness.... The center of gravity in this world is located in the future, in what is desired, in what ought to be, and not in the self-sufficient givenness of an object, in its being-on-hand, *not* in its present, its wholeness, its being-already-realized. My relationship to each object within my horizon is never a consummated relationship; rather, it is a relationship which is imposed on me as a task-to-be-accomplished [assigned], for the event of being, taken as a whole, is an open event; my situation must change at every moment-I cannot tarry and come to rest. The object’s standing over against me, in space and in time, is what constitutes the principle of the *horizon*: objects do not *surround* me (my outer body) in their presently given makeup and their presently given value, but rather-stand *over against* me as the objects of my own cognitive-ethical directedness in living my life within the open, still risk-fraught event of being, whose unity, meaning, and value are not *given* but imposed as a *task* still to be accomplished. (Bakhtin 1990, pp. 97–98)

Bakhtin argued that a person cannot be understood without consummating this *tasked possible*,

constituting this life horizon. Bakhtin argues that comprehension is an aesthetic act of consummation of one's life horizon, so the one's possible becomes given (дан, дан) and finalized. In this aesthetic act, the one's *horizon* becomes his or her *environment*. Consummation is a gift, a surplus of vision, that one person can give another one in which "other-possessed life can always turn into fated life" (Bakhtin 1990, p. 152). The given possible – the juxtaposed, determined, and finalized life possibilities – constitute the fated life.

Fate is individuality, that is, the essential determinateness of a person's existence that determines his entire life, all his acts. In this respect, even the act of thinking is determined not from the standpoint of its theoretical-objective validity, but from the standpoint of individuality – as characteristic precisely for the given determinate person, as predetermined by that person's existence; and **all other possible acts are, likewise, predetermined by individuality or actualize the individuality.** (Bakhtin 1990, p. 175)

In the treatise "Author and Hero in Aesthetic Activity," *the empty of responsibility possible* seemed to become rehabilitated and transformed into *the tasked possible* – a raw material for an aesthetic act of its consummation into *the given possible*. There Bakhtin defined the aesthetics as a transformative relationship between *I* (the spirit, *the tasked possible*) and *the other* (the soul, *the given possible*). In his next big work, the book on Dostoevsky's poetics (1929/1961), Bakhtin again rethought the concept of the possible and seemed to reject either this particular notion of aesthetic as an act of consummation of unfinalized *tasked possible* or the entire notion of aesthetics, apparently dropping this notion from his lexicon.

The Dialogic Possible

In his book on Dostoevsky's poetics, Bakhtin criticized and rejected the given possible – the finalized aesthetic possible – as "a monologic design" in the literature and elsewhere:

In a monologic design, the hero is closed and his semantic boundaries strictly defined: he acts, experiences, thinks, and is conscious within the limits of what he is, that is, within the limits of his image

defined as reality; **he cannot cease to be himself, that is, he cannot exceed the limits of his own character, typicality or temperament** without violating the author's monologic design concerning him. (Bakhtin 1999, p. 52)

At the first glance, Bakhtin returned back to his Kant-inspired notion of *the tasked possible*, which is unfinalized and ethically charged. If in "Author and Hero in Aesthetic Activity" the raw material of the hero's *tasked possible* has to be overcome and transformed into *the given possible* in the aesthetic act of consummation of the hero, in "Problems of Dostoevsky's poetics," this raw material of the tasked, ethically charged, possible seemed to get rehabilitated. However, in my view, this is not accurate. Instead of the apparent rehabilitation of *the tasked possible*, Bakhtin introduced an entirely new concept that I call "the dialogic possible."

The dialogic possible, or what Bakhtin often referred as "the new possible," is born in a human *encounter* with the other, when people are genuinely interested in each other, address each other, and respond to each other taking each other seriously as "a plurality of consciousnesses, with equal rights and each with its own world, combine but are not merged in the unity of the event [co-being]" (Bakhtin 1999, p. 6, italics original). Russian philosopher, psychologist, and educator Alexander Lobok describes Bakhtin's notion of encounter (vstrecha, встреча) in the following way:

The encounter/meeting is the ultimate opportunity to hear yourself in the other. This other can be a physical interlocutor or it can be an encounter with a text or with some phenomenon of culture, which forces me to make that very effort. The encounter/meeting, which I am talking about, is that what presupposes my great effort to encounter the other who is not overlapping with me (i.e., opaque to me), but who is interesting for me. [This meeting generates] a point of puzzlement/surprise and at the same time it is a point of some kind of unusual joy of discovery of myself in the [other] unexpected for me. This is as if [the other] talks about something that is deeply intuitively clear to me. And at the same time, [the other] creates the [new] space, in which these deep intuitions of mine begin to live and begin the fireworks of my own creative thinking . . . [The other] capture[s]/hook[s] something in me, which is essential about me. To "capture/hook" something in me, means to provoke, spark, self-actualize, and initiate some kind of my own activity.

And this situation of the encounter/meeting that I am describing here is, as a matter of fact, an educational situation. The genuine education unavoidably involves an element of provocation.

What is important for me, as a teacher, is that my encounter with the students is the [new] space of my own personal self-growth, my own self-actualization. The encounter with my students is the process of my own self-making/self-creation/self-becoming and, thus, my own self-education. (Lobok 2014; the fragments are from two video conferences, transcribed and translated by us). (Cited in Matusov and Marjanovic-Shane 2015, p. 216)

In the dialogic encounter, new possibilities for person's self-actualization, new horizon, new worldview, and new assigned possibility emerge. Although the most acute encounter that generates the dialogic possible often occurs in physical face-to-face meeting, it can also occur via a text and even via one's imagination, when a person involves in an imaginary dialogue with real past people or even with imaginary literary characters. The last possibility was described by infamous Russian political terrorist Boris Savinkov² (1879–1925) in his diaries (Savinkov and Shaplen 1931), where the real political terrorist Boris Savinkov argued with fictitious literary characters of Leo Tolstoy (Pierre Bezukhov, *War and Peace*) and of Fyodor Dostoevsky (Rodion Raskol'nikov, *Crime and Punishment*) about ethical issues of political terrorism. Bakhtin highly appreciated the literary artistic work by Dostoevsky for the creation of the Big Encounter and, thus, Big Dialogue:

As an artist, Dostoevsky uncovered in the image of a given idea not only the historically actual features available in the prototype (in Napoleon III's *Histoire de Jules Cesar*; for example), but also its *potentialities*, and precisely this potential is of the utmost importance for the artistic image. As an artist Dostoevsky often divined how a given idea would develop and function under certain changed conditions, what unexpected directions it would take in its further development and transformation. To this end, Dostoevsky placed the idea on the borderline of dialogically intersecting consciousnesses. He brought together ideas and worldviews, which in real life were absolutely estranged and deaf to one another, and forced them to quarrel. He extended, as it were, these distantly separated ideas by means of a

dotted line to the point of their dialogic intersection. In so doing he anticipated future dialogic encounters between ideas which in his time were still dissociated. He foresaw new linkages of ideas, the emergence of new voice-ideas and changes in the arrangement of all the voice-ideas in the worldwide dialogue. And thus the Russian, and worldwide, dialogue that resounds in Dostoevsky's novels with voice-ideas already living and just being born, voice-ideas open-ended and fraught with **new possibilities**, continues to draw into its lofty and tragic game the minds and voices of Dostoevsky's readers, up to the present day.

In such a way, without losing any of their full and essential semantic validity, **the idea-prototypes used in Dostoevsky's novels change the form of their existence: they become thoroughly dialogized images of ideas not finalized monologically; that is, they enter into what is for them a new realm of existence, artistic existence.** (Bakhtin 1999, p. 91)

I argue that Bakhtin's notion of the dialogic possible is super important for humanistic and social sciences. Bakhtin essentially introduced a dualism in social sciences by insisting that human subjectivity can be studied both as *the given possibility*, depicting human subjectivity as the finalized and objective, and as *the dialogic possibility*, addressing and responding to the studied other. The objective subjectivity, rooted in the necessities of the given, is studied by the modern positivist sciences (Matusov et al. 2019a). However, the authorial subjectivity, rooted in a dialogic encounter, should be studied only in a dialogue science. Bakhtin insisted that the very category of necessity is essentially inhuman, while humanness is found in the striving to liberate oneself from necessity: "[The concept of] 'necessity' is an 'inhuman' category, according to Bakhtin" (commentary by Gogotishvili in Bakhtin 2002, p. 622; translated by me). My colleagues and I argue "that dialogic analysis belongs to dialogic science, which focuses on studying 'the surplus of humanness' (Bakhtin 1991, p. 37). 'The surplus of humanness' is 'a leftover' from the biologically, socially, culturally, and psychologically given – the typical and general – in the human nature. It is about the human authorship of the ever-unique meaning-making" (Matusov et al. 2019b, p. E20). "...in Dostoevsky man [person] transcends his 'thingness' and becomes the 'man in man'".

²https://en.wikipedia.org/wiki/Boris_Savinkov

only by entering the pure and unfinalized realm of the idea, that is, only after he has become an unselfish man of the idea. Such are all the major heroes in Dostoevsky—that is, those who participate in the great dialogue” (Bakhtin 1999, p. 86).

Bakhtin argued that the objective subjectivity – the human subjectivity that is predictable, common, stable, and calculatable – studied by the positivist science becomes legitimate only when it is dialogized, when it returns to the authorial consciousness of the studied person, and when it is addressed and responded by the authorial consciousness of the researcher. Bakhtin noticed that all characters in Dostoevsky’s polyphonic novels and stories know everything that other people think and tell about them (Bakhtin 1999, pp. 52–53, 72). When the person’s subjectivity is objectivized behind his/her back, this truth about the person becomes oppressive.

A man [person] never coincides with himself. One cannot apply to him the formula of identity $A \equiv A$. In Dostoevsky’s artistic thinking, the genuine life of the personality takes place at the point of non-coincidence between a man and himself, at his point of departure beyond the limits of all that he is as a material being, a being that can be spied on, defined, predicted apart from its own will, “at second hand.” The genuine life of the personality is made available only through a *dialogic* penetration of that personality, during which it freely and reciprocally reveals itself.

The truth about a man in the mouths of others, not directed to him dialogically and therefore a *secondhand* truth, becomes a lie degrading and deadening him, if it touches upon his “holy of holies,” that is, “the man in man.” (Bakhtin 1999, p. 59)

To study a person means to understand him or her in a dialogic encounter, Bakhtin argued that understanding involves a researcher’s authorial evaluation and authorial judgment of the studied person’s ideas addressing this person and the readers of the research in a dialogue encounter, “Evaluation as a necessary aspect of dialogic cognition” (Bakhtin 1999, p. 161). The social science researcher is always an author in a dialogue. The researcher authors his or her evaluations and judgments. These evaluations and judgments can be even unpleasant and disagreeable constituting dramatic events in dialogic encounters – they can constitute

dialogue-agreement, dialogue-admiration, dialogue-disagreement, and/or dialogue-protest (Kurganov 2009; Matusov et al. 2019a, b). “Human thought is not systematic but dialogic. Human thought demands a response, objections; it demands an agreement or a disagreement. Only in the atmosphere of this free struggle, the human and artistic thought can develop itself” (Bakhtin 2002, p. 459; translated by me).

Understanding and evaluation. **Understanding is impossible without evaluation.** Understanding cannot be separated from evaluation: they are simultaneous and constitute a unified integral act. The person who understands approaches the work with his own already formed worldview, from his own viewpoint, from his own position. These positions determine his evaluation to a certain degree, but they themselves do not always stay the same. They are influenced by the artwork, which always introduces something new. Only when the position is dogmatically inert is there nothing new revealed in the work (the dogmatist gains nothing; he cannot be enriched). The person who understands must not reject the possibility of changing or even abandoning his already prepared viewpoints and positions. In the act of understanding, a struggle occurs that results in mutual change and enrichment.

A meeting [encounter] with a great human being, as something that determines, obligates, and unites – this is the highest moment of understanding. (Bakhtin 1999, p. 142)

In my authorial judgment, addressing the readers, Bakhtin’s notion of *the dialogic possible* does not reject his prior notions of *the tasked possible* and *the given possible*,² but rather it calls for dialogization of these prior notions. *The given possible* – the objective subjectivity, the environment of the studied person seen by the researcher through the researcher’s surplus of vision, and the authorial judgments by the researchers about the studied person – must be offered by the researcher to the researched and other as provocations for a dialogue. As Alexander Lobok points out, this dialogic encounter opens new possibilities for the person’s self-actualization – *the tasked possible*. “We could say that in Dostoevsky man [person] transcends his ‘thingness’ and becomes the ‘man in man’ only by entering the pure and unfinalized realm of the idea, that is, only after he has become an unselfish man of the idea. Such

are all the major heroes in Dostoevsky – that is, those who participate in the great dialogue” (Bakhtin 1999, p. 86).

The Everything Possible

Finally, I want to briefly introduce another notion of the possible that I abstracted from Bakhtin again with the reference to work by Dostoevsky – *the everything possible*. Originally, this notion was introduced by Dostoevsky in the novel *The brothers Karamazov* by Ivan Karamazov arguing that if God does not exist, “everything is permitted.” However, Bakhtin traces this idea throughout Dostoevsky’s work:

Very many, and including the most important, ideas, themes and images of [Dostoevsky’s] work... appear here in extremely keen and naked form: the idea that “**everything is permitted**” if there is no God and no immortality for the soul (one of the leading idea-images of his work); the related theme of **confession without repentance and of “shameless truth,”** which runs through all of Dostoevsky’s work beginning with *Notes from Underground*; the theme of the final moments of consciousness (connected in other works with the themes of capital punishment and suicide); the theme of a consciousness on the brink of insanity; the theme of sensuality, penetrating the highest spheres of consciousness and thought; the theme of the total “inappropriateness” and “unseemliness” of life cut off from its folk roots and from the people’s faith, and so on—all these themes and ideas, in condensed and naked form, are fitted into the seemingly narrow confines of this story. (Bakhtin 1999, p. 144)

Abstracting from theological debates about the existence of God and immortality of the soul as the basis of morality – i.e., ethical self-limitation in the relationship with others – this Dostoevsky-Bakhtin notion of *the everything possible* resonates with the current post-truth and post-morality political currents. In the post-truth, post-morality world of the everything possible, there are no judges – only the power-win rules. The might, the manipulative, the cunning is the right. “If I can, I must. If I cannot, I must double my efforts.” The other is shamelessly rejected together with dialogue and responsibility. Thus, only irresponsible deed is possible. *The everything possible* is a form of *the empty of responsibility possible*.

Cross-References

- ▶ [Determinism](#)
- ▶ [Dialogism](#)
- ▶ [Polyphony](#)
- ▶ [Post-Truth](#)
- ▶ [Reality](#)
- ▶ [State of Consciousness](#)

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The Possible in the Life and Work of René Magritte

Lisa Lipinski

Columbian College of Arts and Sciences, George Washington University, Washington, DC, USA

Abstract

René Magritte (1898–1967) was an internationally renowned painter, draughtsman, printmaker, sculptor, photographer, filmmaker, and the leading figure in the Belgian Surrealist movement. Using all of the pictorial techniques of oil painting at his disposal, Magritte took ordinary and banal objects we see in the world and put them into paintings, which visualize not what is real, but what is surreal, the resolution of the dream and waking state, in order to invoke a state that he called mystery. He envisioned multiple possibilities in creating an image rather than confining himself to the binary opposition of logical and illogical juxtaposition. He was interested in the problems posed by painting as a visual and philosophical art form. For Magritte, painting was a form of thinking and rather than replicating reality, he made painting into an art of the possible.

Keywords

Art · Dream · Language · Mystery · Painting · Philosophy · Poetry · Resemblance · Simulacrum · Surrealism · Thought · Trompe l'oeil

Research on Magritte

René Magritte (1898–1967) may be the most famous surrealist in the world today. His iconic imagery has been imitated, appropriated, and *détourned* in all manner of cultural products, from high art to popular culture, which is fitting considering that he began his career as a commercial artist designing advertisements and for a time in the 1930s, he operated his own graphic design studio. In *Ceci n'est pas un Magritte. Essay sur*

Magritte et la publicité Georges Roque examined the semiotics of Magritte's advertisements, showing the formal and conceptual links between his graphic designs and his paintings (Roque 1983).

Magritte's paintings continue to enchant successive generations of spectators who flock to contemporary exhibitions around the world and the Magritte Museum, which opened in Brussels in 2009. To accompany the opening of the museum, Michel Draguet wrote a new biography of the artist, adding details related to his early life in Charleroi and Brussels (Draguet 2014). Recent exhibitions provided opportunities to view his best-known works and to rediscover what makes his art so compelling and critically important to the history of modern art. A major retrospective at the Museum of Modern Art, New York, *Magritte: The Mystery of the Ordinary, 1926–1938* (Umland et al. 2013) brought together about 80 paintings, collages, and objects with a selection of photographs, periodicals, and early commercial work, tracing central themes from this formative period of his career. At the San Francisco Museum of Modern Art, the exhibition *René Magritte: The Fifth Season* (Haskell 2018) was organized around the museum's notable painting, *Personal Values*, acquired in 1998. The exhibition included the complete series, *The Empire of Light*, in which an illuminated sky appears above a neighborhood at night, and select examples from the sunlit or *Vâche* periods, which are less well-known and have been considered marginal to his oeuvre. In Paris and Frankfurt, the exhibition *Magritte. The Treachery of Images* (Ottinger 2017) brought together iconic and lesser known works. The catalog essays showed that Magritte's surreal images were not the result of chance or the dream, but his exploration of the traditions and concepts of painting and philosophy. The catalog reproduced correspondence between Magritte and prominent philosophers, Chaim Perelman, Alphonse De Waelhens, and Michel Foucault. *Magritte and Contemporary Art: The Treachery of Images*, an exhibition at the Los Angeles County Museum of Art (Magritte et al. 2006) revealed the precise connections between Magritte's work and major contemporary artists. Magritte's art was admired in the later years of his life, and continues to be

popular with artists, art historians, and the general public.

Magritte's friends and colleagues began publishing accounts of his life and career, starting in 1943, with Marcel Mariën's monograph (Mariën 1943), *Magritte*, followed by Louis Scutenaire's 1947 monograph *René Magritte*, and Patrick Waldberg's *René Magritte*, published in 1965 (Waldberg 1965). The American art historian Suzi Gablik met the artist in 1959 and lived with him and his wife Georgette for 8 months gathering information. Gablik published *Magritte* in Great Britain in 1970 (1972 in America), reissued in 1985. (Gablik 1985) A.M. Hammacher's *Magritte* was published in 1974. Harry Torczyner's *René Magritte: The True Art of Painting* (Torczyner 1985) drew on his long-standing friendship with the artist and published some of Magritte's writings. In 1969, British art critic and historian David Sylvester curated a retrospective for the Tate Gallery (Sylvester 1969), which he followed with a monograph *René Magritte and the Silence of the World* in 1992 (Sylvester 1992). With Sarah Whitfield and Michael Raeburn, Sylvester wrote and edited the comprehensive five-volume *René Magritte, catalogue raisonné* (Sylvester et al. 1992a, b, 1993). A sixth volume of *Newly Discovered Works* was published in 2012 (Whitfield 2012).

Recent critical monographs provide new insights into Magritte's biography and offer fresh interpretations of Magritte's art. In *René Magritte: Beyond Painting* (Allmer 2009) Patricia Allmer employed a wide range of literary and philosophical theoretical frameworks to analyze the paintings, noting the intertextual relations between Magritte's work and that of other Surrealist artists (see entry ► "Surrealism"). Her latest book *René Magritte* (Allmer 2019) noted the significance of popular entertainments on his art, specifically the circus and county fairs in Charleroi, magic shows, popular cinema, and detective fiction. In *Decoding Magritte* (Levy 2015) Silvano Levy applied Roman Jakobson's linguistic theories of metaphor and metonymy and the neurological disorder of aphasia to decode the hidden structures of Magritte's paintings. The inclusion of previously unavailable source material in the

form of photographs and substantial interviews with Georgette Magritte, Louis Scutenaire, Irène Hamoir, Marcel Mariën, and George Melly provides valuable primary resources. The more anonymous his pose as the man in the bowler hat, ironically the more subject-like and subjective his work appears to be, in both his self-portraits and in photographs of him and his work. Exploring Magritte through the lens of contemporary art theory, including the idea of painting as indexical, allows a new, non-iconic view of his art to emerge in *René Magritte and the Art of Thinking* (Lipinski 2019).

Magritte produced a voluminous amount of writing in the form of letters, catalog essays, brief texts on art, autobiographical statements, and interviews. For primary sources, indispensable books are André Blavier's edited *Écrits complets* (Magritte 1979) and Kathleen Rooney and Eric Plattner's edited English translation of *Selected Writings* (Magritte 2016).

A Disturbing Poetic Effect

After his studies at the École des Beaux-Arts in Brussels between 1916 and 1918, Magritte quickly aligned himself with the Belgian avant-garde, who were debating self-reflexive ideas about the nature of art. In the summer or fall of 1923, Belgian writer Marcel Lecomte, a member of the Belgian surrealist movement, showed Magritte a reproduction of Giorgio de Chirico's *Le chant d'amour* (*The Song of Love*), 1914. Until then, Magritte had experimented with different styles of artistic expression, including cubism, futurism, and abstraction. After de Chirico's revelation, Magritte saw new possibilities for painting. Through distortion of scale and perspective, using traditional techniques of painting, such as chiaroscuro, De Chirico transformed ordinary volumetric objects into scenes with the power to induce a deeply felt and existential sensation. No longer a window onto the real world, nor an abstraction, painting was a dreamlike and enigmatic expression of the depths of the human mind. Magritte recalled what moved him about this painting: "This triumphant poetry supplanted the

stereotyped effect of traditional painting. It is a complete break with the intellectual habits peculiar to artists who are prisoners of their talent, virtuosity and all petty aesthetic frills. It is a question of a new vision in which the viewer rediscovers his isolation and hears the silence of the world.” (Magritte 2016, p. 59).

As he noted in his autobiography, from 1925 to 1936 Magritte sought to create “a disturbing poetic effect” in his paintings and he did so by taking objects out of their usual settings and relocating them to new places and placing them in unexpected combinations. He also created new objects, changing the substance, for example, painting a sky made of wood, using words with images, and modifying images from commercial art as well as the Larousse dictionary. When recontextualized, known objects can gain affective power, and vaguely familiar objects can become new. Magritte’s paintings manifest the surreal or surreality, that is, the resolution of the dream and waking state, in order to invoke a state that he called mystery.

In addition to painting objects, both real and invented, Magritte added curtains, frames, and mirrors, which are all traditional metapictorial devices, to enhance the illusion of three dimensions and add to the complexity of the pictorial space (Fig. 1). *La rencontre* (*The Encounter*), 1926. [Oil on canvas, 139.5 × 99 cm. Kunstsammlung Nordrhein-Westfalen, Düsseldorf. Banque d’Images, ADAGP/Art Resource, NY. © 2017 C. Herscovici/Artists Rights Society (ARS), New York] depicts a blue curtain drawn back to reveal three bilboquet figures, one of his iconic objects taken from a children’s game, which appear to confront their own images in a mirror. The space is ambiguous, neither stage set nor landscape, and much of what one sees is the reflection and the complex perspective of the frame. The mirror is set at an angle to the picture plane. The top edge is not parallel to the bottom, where a barely perceptible line marks the boundary between the actual scene and its reflection. Dark mountains rise up behind the bilboquets under a cloudy gray sky. Two contradictory levels of pictorial reality are on display: the sky appears in the reflection as well as above and behind the mirror. Part of the mirror frame is cut off at the right edge

of the painting, and behind it, pushed tight as if supporting the mirror, is another wooden frame. The viewer is positioned slightly above the human surrogates, whose lower contours are cut off. The chiaroscuro and the shadows on the ground give the objects a sense of solidity and weight. A light source flows in from the left on the other side of the curtain. As can be seen only in the reflection, the terrace ends abruptly behind the curtain and another gray area floats adjacent to it. There is no visible wall behind the figures, which are in our implied space. The space depicted, then, exists behind the viewer, who is therefore obliterated in the reflection. The painting visualizes the complexity of vision as theorized by the French psychoanalyst Jacques Lacan and Maurice Merleau-Ponty. The eyes of the three figures are not properly aligned with those of their doppelgängers, which creates the uncanny feeling that



The Possible in the Life and Work of René Magritte,
Fig. 1 *La rencontre* (*The Encounter*), 1926. [Oil on canvas, 139.5 × 99 cm. Kunstsammlung Nordrhein-Westfalen, Düsseldorf. Banque d’Images, ADAGP/Art Resource, NY. © 2017 C. Herscovici/Artists Rights Society (ARS), New York]

they are looking elsewhere and at something besides their own reflection, namely, the viewer. (Lipinski, 23) The field of vision has two sides, one from which we see and another from which we are seen. In *The False Mirror*, 1929, a single human eye returns our gaze, holding the viewer enthralled in its mystery. The dark oval of the pupil floats in the middle of the iris, which is composed of a cloud-filled blue sky.

Magritte and his wife Georgette lived in Paris from late 1927 to 1930, during which time he painted many of his most famous works, including *The Treachery of Images*. He wrote to Paul Nougé: “I think I have made a really striking discovery in painting . . . as a result of the experiments I’ve made here, I have found a new potential in things—their ability to become gradually something else, an object merging into an object other than itself” (Sylvester 1992, p. 246). Magritte experimented with this new technique of metamorphosis, or becoming, with landscapes and figures (Fig. 2). *Découverte (Discovery)*, 1927. [Oil on canvas, 65 × 50 cm. Royal Museums of Fine Arts of Belgium, Brussels. Banque d’Images, ADAGP/Art Resource, NY. © 2017 C. Herscovici/Artists Rights Society (ARS), New York] represents a woman whose flesh appears to be composed of another substance, either wood or the fur of an animal. Before our eyes, she appears to be in the process of becoming another kind of being or substance. For Magritte, painting does not express emotion or feelings, which he believed have no visible form. In a statement written for an exhibition in 1960, Magritte wrote: “Resemblance is part of the essential mental process; that of resembling. Thought ‘resembles’ by becoming what the world presents to it, and by restoring what it has been offered to the mystery without which there would be no possibility of either world or thought. Inspiration is the result of the emergence of resemblance” (Magritte 1960). Thought is no longer limited to the recognition of what is, but extends to what something could become, to its power and potential (see entry ► “Thought Experiments”).

Magritte’s paintings with words and images offer compelling lessons about the nature of pictorial representation and the power of images to

deceive, to puzzle, to make us see things we overlook, and, ultimately, to make us think about what is possible. The artist placed words and forms in various configurations and combinations in order to explore the image’s inherent communicative capacity, connecting the issue of resemblance to thought, and to feeling, in an original way. In *La trahison des images (The Treachery of Images)*, 1929) a tobacco pipe floats in a pale off-white space, its shiny brown bowl and curvaceous stem reflecting the light. Below the pipe, a neat cursive script reads *Ceci n’est pas une pipe*, informing the viewer that this object is not a real pipe – it is an image of a pipe. No other painting by him has generated as much interest and interpretation. (Foucault 1983) *The Treachery of Images* represents the culmination of Magritte’s word paintings. He would produce more paintings with words, but this one succinctly expresses two important ideas. One, the obvious statement that



The Possible in the Life and Work of René Magritte, Fig. 2 *Découverte (Discovery)*, 1927. [Oil on canvas, 65 × 50 cm. Royal Museums of Fine Arts of Belgium, Brussels. Banque d’Images, ADAGP/Art Resource, NY. © 2017 C. Herscovici/Artists Rights Society (ARS), New York

this is a painting of a pipe, not a real pipe. The second, the demonstration that the power of resemblance, defined as “thought” by Magritte, overrides all other processes of signification, and constitutes the most powerful mode of thinking. The potential of the forceful images he produced in this period extend to the realms of the affective, psychological, economic, and aesthetic. Such is the treachery of images – they produce truth even as they have the ability to misrepresent it.

Magritte’s art forces us to think above and beyond the simple process of recognition. This is a pipe, one says when looking at a painting of an object that resembles a pipe. This painting of a pipe is not a pipe. This painting of a pipe mounted inside a painting is not a pipe. Through a range of pictorial devices, like words and paintings-within-paintings as well as images of floating rocks, Magritte asserts the phantasmatic power of the false, the operation of the simulacrum. Levitating objects defy gravity in reality, but in painting they embody a different mode of thought, not of resemblance, which is a way copies are judged according to their relation to a model or the idea, but of difference.

In his 1929 pictorial essay, Magritte wrote: “No object is so tied to its name that we cannot find another one that suits it better” (Magritte 2016, p. 33). The drawing above the statement shows a leaf with a line connecting it to the inscription *Le canon*. The label does not match the object. Throughout the essay, Magritte considers the permutations of the elusive relationship between drawn objects, their names, and reality. This statement illustrates the central idea of structuralism – namely, the arbitrary nature of the linguistic sign (see entry “► Semiotics”). If any word can replace another, then there is no ground, no foundation on which to base a shared cultural heritage or understanding. At the same time, Magritte’s lesson opens up possibilities for change and evolution in our uses of words and images. The relationship between words and images, between poetry and painting, has a long history in the study of the visual and literary arts and in theories of rhetoric, communication, and knowledge. Through his investigation of both the iconic and linguistic lexicons, Magritte placed

himself in this tradition, seeking to counteract the sedimentations, beliefs, and unconscious rigidity of the mental habits developed around reading and looking at art.

The word paintings open up poetic potentialities of things as well as words. In a modified version of a public lecture, “La Ligne de vie,” given by Magritte in 1938 at the Koninklijk Museum van Schoone Kunsten, Antwerp, first published in 1947 in a monograph on Magritte by Louis Scutenaire, Magritte explained how art can transcend the limitations of ordinary language.

“The habit of speaking for the immediate needs of life imposes a limited meaning on words that denote objects. It seems that ordinary language sets imaginary boundaries to imagination.

But one can create new relationships between words and objects and specify qualities of language and objects of which we are generally unaware in the course of daily life.” (Blavier and Magritte, 1979, p. 120).

Visible things can hide other things, thereby opening up possibilities beyond one’s immediate perception. Magritte experimented with the picture-within-a-picture to produce a number of resonant images, such as *La condition humaine*, 1933 (Fig. 3), an important painting in his oeuvre, constituting a veritable treatise on the nature of painting, vision, and thought. [*La condition humaine* (*The Human Condition*), 1933. Oil on canvas, 100 × 81 cm. The National Gallery of Art, Washington, DC. Gift of the Collector’s Committee. © 2017 C. Herscovici/Artists Rights Society (ARS), New York]. Initially, we have the impression of looking at a painting of a window. As we look more closely, we see the three legs of an easel supporting a canvas – a line of tacks runs along its right edge, and it overlaps the curtain to the left. The painting-within-a-painting appears to come forward into “our” space, though it is our space only within the fictive terms of the painting. It may require some effort to realize the possibility that the view through the window may be different from the landscape painting. Because the window frame and painting are set at a slight angle to the picture plane of the real painting, allowing for the continuation of the lines of the landscape, we are led to assume that the image on the easel and



The Possible in the Life and Work of René Magritte, Fig. 3 *La condition humaine* (The Human Condition), 1933. Oil on canvas, 100 × 81 cm. The National Gallery of Art, Washington, DC. Gift of the Collector's Committee. © 2017 C. Herscovici/Artists Rights Society (ARS), New York

the view through the window are one and the same. But we will never know. There is no way to verify the truth of what we see, or think we see. Edges keep things apart, while illusionist space holds them together. By seeming to abolish the difference between the painting-within-the-painting and the “real” painting, Magritte makes it all the more obvious, just as he makes us aware that illusionism depends on the most artificial and aesthetic conditions, specifically observing the separateness of pictorial space from real space, created by the painter as well as by the mind of the viewer (see entry ► “[Illusion in Art](#)”).

Magritte and Surrealism

Magritte’s art presents a paradox; while its unconventionality was consistent with surrealist goals of revolt and liberation, his conceptual approach diverged from that of his French surrealist peers. Magritte’s images did not come from dreams, nor

did he practice automatic writing or drawing. His methods were deliberate, systematic, and exacting, in his search for the mysterious image of what was possible in painting. Magritte painted things realistically enough to deceive, but not in order to perform the passing treachery, playful or otherwise, associated with *trompe l’oeil*. The purpose of his deception, rather, was to evoke persistent “mystery,” a quality that for Magritte carried no religious or metaphysical connotation. He used *trompe l’oeil* to add another layer of depth, related to reflexivity, to show the virtual within the actual, to make something that was possible but not yet visible appear as full and present in the image. Thus, there had to be some connection with reality. He wanted the viewer to stay with the inspired image of his thought, which involved initially the search for hidden affinities between two things and later the creation of affinities generated by his thoughts about the things themselves. For Magritte, resemblance operates on two levels: first, by isolating images the world offers, such as the things he lists, and second, by making those images of likeness (thought) visible through the application of paint. “An unknown image from the shadows is called forth by an image known in the light” (Magritte 2016, p. 211).

In an interview with Jan Walravens, Magritte explains the relationship of the surreal, reality, and mystery: “The surreal is reality which has not been separated from its mystery. The surrealist painter describes thought which can be made visible through painting. This thought evokes mystery, the mystery without which no thought nor world would be possible.” (Magritte 2016, p. 200) Reality was not an ordinary phenomenon for Magritte, but something deeply mysterious and complex, never fully knowable. In *Le séducteur* (*The Seducer*, 1950) a ship whose entire form, both the schooner and the sails, appears to be composed of water floats on a calm sea. Animated brushwork merges the vessel with the sea and draws attention to the painting’s surface, making it into something other than what it depicts. Resemblance takes over the world, seen in places where there is some kind of contiguity, even as the image could not possibly exist in reality (see entry ► “[Possible in Visual Arts](#)”).

In the spring of 1943, Magritte changed his signature style, discarding his meticulous illusionism in favor of the palette and painterly technique of the French Impressionist, Pierre-Auguste Renoir. He sought to dispel the gloom and pessimism of the war years with a kind of painting which would bring joy and pleasure. In defense of his new style and in response to the Surrealists who criticized his new works, Magritte wrote five separate manifestos between August 1946 and September 1947, in which he noted that painting objects, both real and imaginary, with bright, pastel colors in the full light of the sun, has the power to charm and “to counteract this depressing, banal habit” (Magritte 2016, p. 92). In advocating for “Surrealism in the Sunshine,” he argues that surrealism must no longer be “a bridge between the two wars” (Magritte 2016, p. 97). He believed that one had to move forward rather than dwelling on the past, and to find new ways to use the tools of painting to make an art for the future. Magritte remained in Brussels throughout the war and afterward, with brief trips abroad to attend openings of his exhibitions. In 1948, he signed a contract with the art dealer, Alexandre Iolas, who remained his agent until his death on 15 August 1967.

Late in his life, when asked whether Surrealism was a doctrine or a permanent attitude, Magritte replied that it was “[a]n attitude that exists today, and that has existed for ever . . . In brief, Surrealism is the appearance of a possibility as yet unknown to the mind. I don’t see why the mind couldn’t manifest again this possibility, which is the opposite of a habitual way of thinking” (Magritte 2016, p. 216). His critical and popular reputation grew in the 1960s, and, with greater exposure through exhibitions and monographs, his art exerted a critical influence on a new generation of artists in Europe and the United States.

Conclusion

Magritte constructed his own myth of the bourgeois painter or “secret agent” in and through painting. As we look at the images in Magritte’s paintings, our thoughts, perceptions, and

reactions are set in motion. Though none of us can escape language, Magritte found a way to offer a glimpse of something beyond words, what he would call an image of resemblance. Throughout his career, he developed a repertory of ordinary objects, altering them through techniques he devised in Paris in the 1920s, from trompe l’oeil to collage, metamorphosis, scale shift, and recontextualization. His objective was to access the unknown, to create a kind of spiritualized painting, an art for the present and the future, that is, an art of potentiality. Through painting, his labor, he sought to maximize the power of art to produce new and previously unimagined and unlimited thoughts. In Magritte’s hands, painting could be used to shock, shatter, and provoke experience, to transform life.

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The Possible in the Life and Work of Walt Disney

Margaret McVeigh
Griffith Film School, Griffith University,
Brisbane, QLD, Australia

Abstract

Walt Disney (1901–1966) is one of history’s most dynamic examples of a man who dreamed the impossible and made it possible. He was both a business and creative entrepreneur who has had an everlasting impact on twentieth century animation, entertainment, and culture. There are a number of important biographies of Walt Disney the man which trace his journey to realize his dreams from his start in life as an American Midwestern farm boy, to a pioneering animation artist and

filmmaker, to a founder of the global phenomena which commenced as a small two-man animation studio the Walt Disney Company, to become one of the most powerful international multimedia entertainment conglomerates in today’s world.

Disney made his mark as an innovative storyteller in films such as *Steamboat Willie*, *Snow White and the Seven Dwarfs*, and *Fantasia*. In all that he did he managed to break new ground and create new possibilities in the creation of fantasy worlds by bringing together new genres in screen-based storytelling, new technologies, and new visions for destination based entertainment via the concept of Disneyland.

This entry draws upon key biographical work and articles written about Disney to collate insights into the driving force of his work as an artist and entrepreneur – the ability to dream big visions, to trust in himself and his abilities, to surround himself with like-minded people who would support his dreams, and to go into uncharted territories to create a world of entertainment drawn from the creative imagination of one man. When Disney died on December 15, 1966, he held the record for a film producer with the most Academy Awards earned by an individual, having won 22 Oscars from 59 nominations.

This entry will deal with the work of the “Classic Walt” – roughly the work conceived by Walt Disney as the founding father of The Walt Disney Company from 1923 to 1966 and will draw extensively from the writing and words of Walt Disney the man himself as reported in archives used in key biographical work.

Keywords

Walt Disney · Disney brothers · The Walt Disney Company · Disneyland · *Snow White and the Seven Dwarfs* · *Fantasia*

Disney the Dreamer

Walter Elias Disney was attracted to the world of make-believe and fantasy. He loved to draw and took art classes as a boy. His first job was at the

Film Ad Company which produced animated ads to show between films in the cinema. In his work at Film Ad, Disney demonstrated what would become a lifelong trait – he advanced his knowledge of what was possible in animation by working out “tricks that they hadn’t done” (Barrier 2007, p. 27). Following this, he briefly worked in advertising then opened his own studio in his garage to produce short animations called Laugh-O-Grams. In the early 1920s, he and his brother, Roy O. Disney, went to Los Angeles to create Disney Brothers Studio (Wawro in Wise 2014, p. 152) which eventually became The Walt Disney Company. In 1928, Walt had his first stand out success with the development of the character of Mickey Mouse. Disney was the voice of Mickey Mouse until 1947.

The Disney brothers broke the bounds of the possible when they made *Steamboat Willy* (1928), the first animated short feature with synchronized sound. In 1933, Disney produced *The Three Little Pigs* for which he won an Academy Award. Critics have cited this film as creating a breakthrough in character animation. In making this film, Disney realized the importance of telling emotionally engaging stories to connect with audiences. It is also regarded as one of the industry’s most successful short animations with its “wildly positive audience responses to the film, its extensive run in the cinemas, its promotion often above the feature film of the day, its widespread cross-promotional success (sheet music sales, dolls of the pigs and wolf, etc.), and its extensive international distribution” (Danks 2003, np).

In the 1930s the Disney brothers turned to producing feature length animated films and they began the four-year production of the film *Snow White and the Seven Dwarfs* (1937) based on the Brothers Grimm fairy tale of the same name. This Disney’s first full-length animated feature was labeled “Disney’s folly” because of studio cost overruns but it went on to become the highest grossing film of 1938 and Disney was awarded an Oscar for the film (Nugent in Mollet 2013, p. 109).

The importance of *Snow White and the Seven Dwarfs* as an example of Disney’s ability to turn, what some would say are impossible dreams into

reality, cannot be underestimated. Likewise, the importance of Disney’s belief in the power of fantasy in day-to-day life as told via the story of this film can also not be underestimated. *Snow White and the Seven Dwarfs* was released following the period of the Great Depression in America. Americans had lost their vision of the American Dream developed in the early 1920s and were suffering poverty, unemployment, and economic oppression. Using the power of animation, Disney was able to create a vision of a better world for his audience. Mollet argues that through his fantasy movies like *Snow White*, that “Disney kept the dream of success alive through *Snow White*’s ability to dream. She sings of her wish to find the one she loves and for him to take her away from her current plight. The prince appears, and the two sing together of the joys of finding their love” (Mollet 2013, p. 114).

Scholars see Disney’s adaptation of classical European fairy tales as a seminal influence on American culture and the American psyche in the Twentieth Century. Mollet argues that because of his own childhood suffering with a tyrannical father, that Disney was attracted to a world of world of make-believe and fantasy. “He felt drawn to fairy tales and the ideal of a ‘happily ever after’ through the struggles he had undergone in his own life” (2013, pp. 113–114).

One can thus interrogate how Disney used the fairy tale to enter a world of the possible. Mollet considers the key arguments in this debate noting Zipes’ assertion that Disney “cast a spell” over the classical fairy tale, capitalizing on American naïveté to infuse his viewers with false hope (Zipes in Mollet 2013, p. 111), whereas Sammond argues that “Disney was represented as an interceding between an ideal past and an unrealized ideal future, distilling the best impulses of that past into a digestible form that would reappear as the present corrected in that future” (Sammond in Mollet 2013, p. 110).

Disney Firsts

While *Snow White and the Seven Dwarfs* created a new and more positive story spin on the original

Brothers Grimm fairy tale, the film showcased Disney's daring to enter the realm of the possible. He saw cartoons not just as an adjunct to the main feature film screening but as an art form in their own right. *Snow White and the Seven Dwarfs* was made at a then-staggering cost of \$1.5-million and it also created new ways of using technology to tell screen based stories. Disney used the then new medium of sound to be one of the first to use song to tell his stories, rather than only as an emotional accent to the action. He also was the first in Hollywood to use Technicolor in animation. His use of color "added life and character to the story, making it a more poignant and utopian representation of America in the 1930's than many movies of the time. The bright colours of Disney's animation reflect the optimism of the story and hence ultimately the story's underlying ideology" (Mollett 2012, p. 122). *Snow White* was also a stellar leap not only in running time but also in technical artistry and vision. New depth was added to traditional 2D action with the use of the new multiplane camera which gave a realistic depth of field. The film was also credited for its ability to add new emotional depth to animated characters by building on Disney's previous learnings from *The Three Little Pigs*.

Following *Snow White and the Seven Dwarfs*, the Disney studios released a wave of outstanding feature-length animation films that have gone on to become classics, including *Pinocchio* (1940), *Fantasia* (1940), *Dumbo* (1941), and *Bambi* (1942).

Perhaps the most brave and impossible of these films to realize was *Fantasia*. Science fiction writer Ray Bradbury recalls of seeing *Fantasia* as a child and notes that it was one of the seminal childhood experiences to trigger his creative imagination (Greasley in Wise 2014, p. 152). *Fantasia* is a case in point of Walt Disney's do or die efforts in making his dreams come to reality. *Fantasia* cost almost \$2.3 million but it had limited box office success because its show engagements were limited by the unavailability of enough Fantasound equipment to screen the new sound techniques used properly and the fact that revenues from Europe were affected by World War II. Disney himself was unsatisfied with how his

vision translated into reality in the film. He said: "I wanted a special show just like Cinerama plays today [in 1956] . . . I had *Fantasia* set for a wide screen. I had dimensional sound . . . To get that wide screen I had the projector running sideways . . . I had the double frame. But I didn't get to building my cameras or my projectors because the money problem came in . . . The compromise was that it finally went out standard [that is, standard screen dimensions] with dimensional sound. I think if I'd had the money and I could have gone ahead I'd have had a really sensational show at that time" (Disney in Barrier 2007, p. 162).

Making the Impossible Possible: The Power of Imagination and Determination

It would seem that the quest to realize his many ideas was what drove Disney with varying degrees of impact upon and success in his professional and personal relationships. His singlemindedness and determination to elevate animation from short form to long form is demonstrated in the following speech to his employees in 1941.

In the twenty years I have spent in this business, I have weathered many storms. It has been far from easy sailing. It has required a great deal of hard work, struggle, determination, confidence, faith, and above all, unselfishness. Perhaps the greatest single factor has been our unselfish attitude toward our work. I have had a stubborn, blind confidence in the cartoon medium, a determination to show the sceptics that the animated cartoon was deserving of a better place; that it was more than a mere 'filler' on a program; that it was more than a novelty; that it could be one of the greatest mediums of fantasy and entertainment yet developed. That faith, confidence and determination and unselfish attitude has brought the cartoon to the place that it now occupies in the entertainment world. (Barrier 2007, p. 4).

In this speech Disney then goes on to underline his belief in the power of his own imagination and determination.

To me, the future of the business has never looked better. The possibilities in this organization have never looked better. And I can assure you boys that I still have plenty of pep and fight left in me,

and I have the utmost confidence in my ability to solve our problems and to run this business; and I want you to know that I am raring to go. Here is the answer to the crisis with which we're confronted. I'll put it in a nutshell. There are three things: quality production is number one; efficient operation is number two, which leads to the third—production turnover. That is the solution to this whole thing. Simplifying it down to the individual, I would say that . . . the whole thing, is this: A good honest day's work. Believe me, that will be a cure for all our problems. You can't deny that it is individual efficiency that leads to collective efficiency . . . This business has been, and still is, a pioneering venture. Every one of you men here today are pioneers. Most of you are young, and a big percentage of you— a very large percentage of you— have been in this business less than five years. Regardless of what you think, you've got a hell of a lot to learn. Regardless of what you think about conditions, every one of you should feel lucky that you're in the business that you intend to make your career. We should all feel fortunate that we are here, that we have a chance, that we're in on the ground floor. Probably throughout the country there are many men who are more capable than any one of us who don't even have the chance to secure an art education, or even maybe a high school education. I honestly believe that instead of complaining, we should count our blessings. This business is ready to go ahead. If you want to go ahead with it, you've got to be prepared— you've got to be ready for some hard work— you've got to strengthen yourselves in every way— you've got to make yourselves strong. If the business is to survive the many storms that are ahead of it, it must be made strong; and that strength comes from the individual strength of the employees. (Barrier 2007, p. 162)

Barrier reports that this speech alienated employees as Disney was at the time attempting to turn them away from joining the Screen Cartoonists Guild.

Towards the Creation of a Fantastical World

Walt Disney once explained how he directed imagination to wide range of ideas: "To some people, I am a kind of Merlin who takes a lot of crazy chances but rarely makes mistakes. I've made some bad ones. But fortunately, the successes have come along fast enough to cover up the mistakes. When you go into bat as many times

as I do, you're bound to get a good average" (Disney quoted in Lynch 2001, np).

In the two decades preceding his death, Disney was engaged in a number of creative enterprises which stand testament to the diversity of his vision of the possible. During World War II he serviced and supported the American Government's war effort. In the 1950s he became fascinated with the then new technology of television. In 1954 he started Disneyland, an hour long anthology television show of animated cartoons, live action features, and other materials from his studio archives. During this period the Mickey Mouse Club (1955–1959) emerged as a highly successful variety show aimed at children. In the early 1960s Disney continued to create work across a number of fronts including the highly successful feature length fantasy film *Mary Poppins* (1964) which combined animation and live action.

In the last decade of his life Disney worked towards establishing what has become a living legacy to his vision of the fantastical world. In 1952 he wrote to his sister, Ruth, about his idea for a miniature touring show of Americana, which at one point was to be called "Disneylandia." He said:

I've been collecting all sorts of miniature pieces for the past three or four years, with this project in mind. It's been a wonderful hobby for me and I find it is something very relaxing to turn to when studio problems become too hectic" (Barrier 2007, p. 233). In his biography of Disney, Barrier notes that March 27, 1952, the Burbank Daily Review quoted Disney as saying that "Disneyland will be something of a fair, an exhibition, a playground, a community centre, a museum of living facts and a showplace of beauty and magic" (Barrier 2007, p. 233). Barrier also notes the existence of a 1953 "pitch kit," which described the impossible dream of "Disneyland's "lands" in considerable detail, and the park itself in fulsome language: The idea of Disneyland is a simple one. It will be a place for people to find happiness and knowledge. It will be a place for parents and children to share pleasant times in one another's company, a place for teacher and pupils to discover greater ways of understanding and education. Here the older generation can recapture the nostalgia of days gone by, and the younger generation can savour the challenge of the future. Here will be the wonders of Nature and Man for all to see and understand. (Barrier 2007, p. 243)

Conclusion

Disneyland is the ultimate fantasy land and living monument to Disney's ability to turn what some would say is an impossible dream into reality and thus enrich the lives of others. However, Disney also believed in the power of education to assist others to transform their dreams into reality. Disney was instrumental in establishing California Institute for the Arts, or CalArts. Disney's (who was chairman of the board of trustees) preface to the fundraising brochure for the institute, "To enrich the lives of all people" proposes:

The remarkable thing that's taking place in almost every field of endeavour is an accelerating rate of dynamic growth and change. The arts, which have historically symbolized the advance of human progress, must match this growth if they are going to maintain their value in, and influence on, society. The talents of musicians, the self-expression of the actor, and the techniques and applications of fine and commercial artists are being used more and more in today's business, industry, entertainment and communications—not by themselves, but rather, in close association with each other. So artists who can operate in only one field are finding themselves limited and ill-equipped to meet the challenges and opportunities that come their way. What we must have, then, is a completely new approach to training in the arts—an entirely new educational concept which will properly prepare artists and give them the vital tools so necessary for working in, and drawing from, every field of creativity and performance. (Barrier 2007, 299)

Perhaps the most important legacy to the memory of Walt Disney the man who valued the place of the impossible in life, is a sign at the entrance to Disneyland which reads: "Here you leave today behind and enter the world of yesterday, tomorrow and fantasy" (Huebner 2009, p. 228).

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The Possible in the Life and Work of William Grey Walter

Louise Barrett

University of Lethbridge, Lethbridge, AB, Canada

Abstract

William Grey Walter was a pioneer of both electroencephalography (EEG) and cybernetics (the science of control systems). Trained as a neurophysiologist, he was possessed of the technical skill and the imagination to develop EEG into both a diagnostic tool and a means of offering insight into the function of the living brain. His work in cybernetics was far ahead of its time, and he can rightly be considered the father of biologically inspired robotics. His robotic "tortoises" were physical models of the brain based on principles drawn from his EEG work and also represent the first example of behavior-based robotics. Walter was a visionary who recognized the possibility of EEG for studying the living brain and saw how simple physical models could provide deep theoretical insights. Walter's work has only recently been rediscovered and recognized for its originality, creativity, and exuberant delight in exploring the bounds of the possible.

Keywords

Grey Walter · Cybernetics · EEG · Behavior-based robotics · Alpha wave · Neurophysiology

Introduction

If anyone deserves an entry into an encyclopedia of the possible, it is the neurophysiologist and

cybernetician, William Grey Walter (1910–1977). His work explored the bounds of the possible with respect to both the questions he asked and the means used to pursue the answers. A pioneer in the field of electroencephalography (EEG, a technique to measure the electrical activity of the brain via electrodes placed on the scalp), he conducted revolutionary work into the detection of brain tumors via the presence of delta waves, as well as work linking individual differences to variation in alpha, delta, and theta waves. He was also interested in the kinds of altered states of consciousness that could be induced by stroboscopic light (“flicker”) and performed some of the first work in “biofeedback” (the use of visual feedback to control one’s own brain waves) (see Walter 1953; Pickering 2010 for review). Walter is, however, best known for his work in cybernetics (the science of control systems), where he developed the first biologically inspired robots and initiated the field of behavior-based robotics (Walter 1950, 1951, 1953). In this domain, possibility infused his entire enterprise – the adaptive cybernetic systems that interested Walter were imbued with the sense that genuine forms of novelty could, and would, emerge, even when each component of the system was well understood individually: knowledge of a system could only be known through its performance and could not be specified in advance.

The broader discipline of cybernetics itself also spoke to possibility. Unlike American cybernetics, which emerged from military research, the British cyberneticians, of whom Grey Walter was a leading light, were (literally) a less disciplined bunch: more interested in biology and brains than military weapons, they came from a variety of backgrounds; favored dining clubs and informal, relaxed meetings (the Ratio club being the most famous instantiation of this); and mostly pursued cybernetics as enthusiastic amateurs and hobbyists, holding down positions in other fields (Boden 2008; Pickering 2010). A lack of university departments and dedicated research institutions meant that British cybernetics was always a rather marginal subject: cyberneticians had no way to “reproduce themselves,” via their PhD students, nor to direct and sustain the field through time. It was, as Pickering (2010, p. 11) calls it, a “nomad science,

perpetually wandering and never finding a stable home.” While this did not bode well for the future of the field – cybernetics faded quickly with the rise of cognitive, computational AI – this lack of “disciplinary policing” (Pickering 2010, p. 60) enabled postwar cybernetics to escape its narrow academic bounds, infiltrating fields as diverse as architecture, poetry, literature, television, and music. Grey Walter’s work, in particular, gained popular attention, and Aldous Huxley, William Burroughs, and John Cage were all variously inspired and influenced by his book, *The Living Brain* (Pickering 2010).

Biographical Details: Birth to Bristol

Grey Walter – as he was always known, he never went by William – was born in 1910, in Kansas City, USA, to a British father and an American mother, both of whom were journalists. His parents moved to England just after the First World War in 1915, and Walter remained there for the rest of his life. He attended Westminster School and then went on to Cambridge, where he obtained a first in neurophysiology at King’s College (Hayward 2001; Holland 2003). He continued with postgraduate work for a further 4 years, producing a dissertation on “Conduction in nerve and muscle.” His hope was that this would result in a Fellowship at Cambridge, but this was not to be. His son, Nicholas Walter, noted that this was a source of deep disappointment to his father (Holland 2003), but perhaps this was ultimately to Walter Senior’s benefit. Neurophysiology at Oxbridge between the wars was a circumspect, conservative endeavor that “ended at the top of the spinal cord” as Walter (1953, p. 27) himself put it. At Cambridge, E. D. Adrian’s group was investigating the electrical potential and mechanisms of conduction in individual nerve fibers, while at Oxford, Charles Scott Sherrington’s group was engaged in the reconstruction of the reflex pathways of the spinal cord. The direct investigation of the brain itself – the subject that most interested Walter – was seemingly taboo: it was one thing to measure the properties of nerve cells and study reflex actions where carefully

controlled experimental methods could be brought to bear, but “Cambridge still could not accept the brain as a proper study for the physiologist” (Walter 1953, p. 53). Such conservatism did not sit well with Walter, who favored a more free-wheeling, anarchic approach:

Any man or woman who is a scientist by avocation as well as by education is a natural anarchist: the laws of science are no man-made law; they are the parameters of man’s hypothetical vision of the orderly processes of life and expendable in the first moment of inadequacy or redundancy. (Walter 1956, p. 68)

Walter’s failure to secure a Cambridge Fellowship enabled him to take up an invitation by the psychiatrist, Frederic Golla, to join his research team at the Central Pathological Laboratory at the Maudsley Hospital in London (Bladin 2006; Hayward 2001). Golla’s philosophy was much more in line with Walter’s own, recognizing the environmental and physiological origins of conscious states and showing a greater willingness to conduct research that could link the world of science to the world of human values. Walter joined Golla at the Maudsley in 1934, and then, in 1939, they both left to take up positions at the Burden Neurological Institute, which had just opened outside Bristol; Walter remained here for the rest of his working life.

Walter’s move to Golla’s group allowed him the freedom to explore the possibilities of EEG to the full. At Cambridge, the German psychiatrist, Hans Berger’s 1928 discovery of electrical waves in the brain had been met with skepticism: Berger’s “. . .wobbly line did not convince us or anybody else at that time... His entirely original and painstaking work received little recognition” (Walter 1953, p. 53). It was only in 1934, when Adrian and his colleague Brian Matthews themselves demonstrated the “Berger rhythm” (later called the alpha rhythm), that anyone took Berger’s work seriously, although Adrian and Matthews were not entirely enthusiastic, reporting the rhythm to be “disappointingly constant” (Adrian and Matthews 1934).

Frederic Golla, however, had immediately recognized the potential of EEG, and his confidence in the method only grew with the Cambridge results.

Golla enquired of Adrian if he knew of anyone who could build and apply a clinically useful version of the EEG. Adrian recommended Walter. After a visit to Germany to consult with Berger (where Walter discovered that Berger knew nothing of electricity or mechanics), Walter set about constructing, developing, and testing his own EEG machine, a task to which he was well suited as he was “a genius at tackling this kind of problem. . .making impossible things work” (Bladin 2006, p. 172).

Walter’s enthusiasm and energy meant that the establishment of EEG as a useful and clinically relevant technology did not have to wait long: in 1936, he discovered delta rhythms, large slow waves that were indicative of both the presence of cerebral brain tumors and epilepsy. EEG thus moved from being viewed simply as the “wobbly line” of a German psychiatrist to a source of diagnostic authority (Hayward 2001). From this point on, EEG became widely accepted within psychiatry, forming a routine part of hospital examinations. Due to Walter’s efforts, it also moved beyond the bounds of the hospital to more commercial uses, including personality assessments and the establishment of criminal responsibility (Hayward 2001).

Once established at the Burden Neurological Institute (BNI), Walter was even more determined to show how EEG could be connected to human behavior. Building on a suggestion by the Cambridge psychologist, Kenneth Craik, Walter conceptualized alpha waves as a form of scanning mechanism in the visual cortex – a hunt for visual input (Walter 1953). Such a model could explain why the alpha waves were “disappointingly constant” and also why they disappeared when people opened their eyes or thought about an object. From this, Walter reasoned that different forms of alpha waves could indicate different forms of imagination: those with highly persistent alpha waves would have little in the way of visual imagination, whereas those in whom the alpha waves were reduced were obviously enjoying a rich inner life (Walter 1953).

Walter also reconceptualized other patterns of brain activity. Further work on delta rhythms revealed them to present in almost all children

below the age of 9, in addition to being indicators of brain cancer. The persistence of delta waves beyond the age of 9 was, however, interpreted as a sign of pathology and argued to represent an increased risk of juvenile delinquency. Walter (1953), in contrast, noted that such waves persisted in those children who were most easily led; his interpretation, therefore, was that the waves were indicating a search for stability, rather than a risk of degenerate behavior. Theta waves, meanwhile, which had been observed in children as well as those designated as psychopaths, were interpreted initially as indicators of anger and aggression. Walter argued instead that these should be seen as indicators of frustration and loss after the removal of a pleasurable stimulus: his team had first seen theta rhythms in a French student undergoing a routine EEG test, who produced bursts of theta waves every time an accompanying nurse, who was stroking his head during the test, removed her hand. Theta waves, Walter suggested, represented the search for a pleasurable entity (Walter 1953).

Walter also helped EEG “escape from the laboratory” and capture the public imagination. A key element in this was Walter’s natural flair for showmanship; as Hayward (2001, p. 616) puts it: “At a time when the incipient field of neurophysiology was dominated by the reserved and stately figures of Edgar Douglas Adrian and Charles Scott Sherrington, Walter cultivated a more swashbuckling image as an emotional adventurer.” Thus, when Walter and his BNI colleagues discovered that couples and friends tended to share similar alpha-wave patterns, Walter was quick to speculate that marital harmony could depend on alpha-wave compatibility and “made great play of the EEG’s new-found romantic utility, arguing in interviews with *Life Magazine* and on the BBC radio program, *The Brain’s Trust*, that young couples should be routinely tested” (Hayward 2001, p. 626). It should also be mentioned that when Walter swapped wives with his local greengrocer – an emotional adventurer indeed – he discovered that his new spouse had alpha rhythms very different from his own, which led him to reconfigure his theory entirely. Now, contrasting rhythms formed the basis of a “mutually regulating combination,” with love as a

positive transformative influence (Walter 1961, p. 16). By the late 1960s, Walter was arguing that EEG knowledge could even be crucial to world peace: “It may even be that serious crises between nations . . . have arisen because the negotiators have different kinds of imagery and can only talk at cross purposes” (Walter 1968, p. 184).

While Walter’s interpretations and recommendations may have been overblown, it would be fair to say that they were never conclusively wrong. More importantly, Walter’s willingness to tie EEG to real-life concerns, like the human need for love and belonging, offered up a new vision for neuropsychology, at a time when such topics were considered off-limits by most other scientists. Walter’s work on brain tumors and delta waves was also truly revolutionary – long before the likes of fMRI and PET scans, EEG was the only noninvasive means of assessing the health of the living brain. Indeed, Walter’s work on tumors was recognized in the 1945 *Atlas of Electroencephalography* as “the significant pioneering work in this area” (Bladin 2006, p. 172). Walter also developed other machines, in addition to the EEG, to assist with the interpretation of EEG recordings, including both a frequency analyzer (that could pull apart a complex tracing into its component frequencies) and a “toposcope” that presented a visual snapshot of electrical activity projected onto a model of the head (Walter 1953; Bladin 2006). Walter also contributed to his field by founding the EEG society, organizing the first EEG congress, and cofounding the EEG journal. As Harold Shipton (1977, p.iii) wrote in his obituary for Walter: “Few scientific disciplines owe as much to one man as electroencephalography and clinical neurophysiology owe to Grey.”

Our Little Robots in Bristol

Walter’s work in cybernetics – including his famous robot tortoises, Elsie and Elmer – can seem like an unrelated offshoot of his EEG work; an impression reinforced by media coverage at the time, with BBC newsreels declaring “In a modest villa on the outskirts of Bristol lives Dr Grey

Walter, a neurologist, who makes robots as a hobby,” and newspaper reports suggesting that “Toys which feed themselves, sleep, think, walk, and do tricks like a domestic animal may go into Tommy’s Christmas stocking in 1950, said brain specialist Dr. Grey Walter in Bristol last night.” Viewing his cybernetic efforts this way would be a mistake, however: despite Walter’s own descriptions of them as toys, Walter’s robots were intellectual tools, representing physical models of the brain.

In his book *The Living Brain*, Walter accounts for the origins of his tortoises via a discussion of the difficulties inherent in building a scale model of a human brain. After describing the trials of designing and constructing a single model nerve cell, he goes on to point out that, even if it were possible to manufacture a sufficient number to produce a reasonable sized artificial brain, millions of cubic feet of warehousing would be also be needed for storage. And, of course, this doesn’t even begin to touch on the financial costs, which would be equally monstrous: although a single nerve fiber might be made “for about a dime,” it would cost \$1,000,000,000 to manufacture a whole brain’s worth, plus there would be the costs of connecting them all, which Walter calculated would run to about \$2,000,000,000,000,000,000. Once this stage was reached, it would then require around a million kilowatts of power to run this artificial brain. Given these “incalculable costs”, Walter suggested a different approach was needed. Rather than assuming that the performance of the living brain was a sole function of the number of neurons, one could ask instead whether the “elaboration of cerebral functions may possibly derive. . .from the richness of their interconnections” (Walter 1953).

Elmer and Elsie, the robot tortoises (their nicknames were based on the initials of the terms Walter used to describe them – electromechanical robots, light sensitive with internal and external stability), were therefore built as a way to test this idea. Each tortoise – or *Machina speculatrix* to give them their Latin name – was built with, in effect, only two neurons: “two miniature radio tubes, two sense organs, one for light and one for touch, and two effectors or motors, one for crawling and the other for steering” (Walter 1950, p. 43), with power

supplied by a hearing aid battery (for the tubes) and a miniature 6-volt battery (for the motors). In appearance, the robots looked like small motorized tricycles when “naked,” but when fitted with their “shells,” they indeed looked very much like tortoises. The shell was not just for effect, however, but an integral part of the touch reflex and acted as a pressure sensor. The shell was mounted on a rubber touch contact, so that it dangled freely. When the tortoise moved on the level, with the shell not touching anything, the contact was an open circuit. If the tortoise bumped into an obstacle, however, displacing the shell from its usual position, the contact closed, and the touch reflex was activated. The light reflex of *M. speculatrix* was more directly related to Walter’s EEG work. The light sensor was a photoelectric cell mounted on the front of the steering column. The cell was covered with a “hood” that blocked out light from all directions except the front and was fitted with a “running light” (a small headlamp) that indicated whether the steering motor was switched on, so that Walter could tell it was working correctly. The steering column was designed to rotate around its own axis so that, when switched on, the photoelectric cell would “scan” the environment in search of a light source – in much the same way that Walter had suggested alpha waves scanned in search of input. As such, *M. speculatrix* could be seen as both simple model of the living brain and a model of a simple living organism.

With their sense organs in place, the robots were wired up so that they would seek out light sources and attempt to overcome obstacles. In the absence of an immediately detectable light source, the driving motor attached to the front wheel would operate at half-speed propelling the robot forward, while the motor on steering column would rotate the front wheel at full speed (the back wheels were not powered but ran free). The circular motion of the steering column combined with the forward motion provided by the driving motor meant that the tortoise moved in a series of slow, exploratory loops around its environment.

If, during one of these loops, the photocell on the steering column was activated by a light source, the steering motor would stop, the rotation of steering column would cease, and the headlamp

would turn off. At the same time, the driving motor would be switched to full speed. From a behavioral perspective, the detection of a light source would thus lead the tortoise to stop its slow exploratory scanning and instead make a beeline for the light – that is, it would show a positive phototropism. If the tortoise approached a light source too closely, however, its behavior pattern would again shift, this time to “dazzle” mode, designed to enable it to avoid overly bright light. In this case, the steering motor switched on, but only at half-speed, while the driving motor would keep going at full speed so that, instead of reverting to its slow scanning behavior, the “dazzled” tortoise would veer away from the light smoothly before it bumped into it. Walter (1953) referred to this as a negative phototropism, but as Holland (2003) points out, this is not quite right: the dazzle mode is not the opposite of the positive phototropism, but rather simply the exploratory mode being run at different motor speeds. The negative feedback loop of the light reflex was thus designed to enable the tortoises to seek an “optimum” amount of light – neither too bright nor too dim.

Rather than the negative feedback loop used in the light reflex, the touch reflex was based on positive feedback. When the contact on the shell was closed by the tortoise coming into contact with an object, the signal from the light sensor was “ignored” – that is, the vacuum tubes that usually acted as amplifiers of the light signal instead formed part of an oscillating signal: both the driving and steering motors ran at full power, switched off, and then switched on again. Behaviorally, this meant the tortoise would repeatedly bash itself against the obstacle, until it had either pushed it out of the way or managed to move past it.

What made the tortoises particularly interesting to Walter was the way they not only displayed an impressive ability to cope with an uncertain environment via their behavioral tropisms, but how they displayed emergent behaviors that had not been wired into them. So, for example, the tortoises proved adept at “tidying up” their environment: their touch reflex would lead them to push obstacles out of the way in order to get past

them, with the result that, after a time, all the obstacles would be lined up neatly against the walls. This also made the environment much easier for the tortoises to navigate; thus, they not only adapted to their environment, but there was also a sense in which, as a result of their actions, the environment became adapted to them as another form of feedback loop. Another emergent behavior occurred when Walter displayed his tortoises at a meeting of the British Association for the Advancement of Science and discovered that they seemed to have an inherent preference for women over men: the light reflecting from women’s nylon stocking apparently was sufficient to attract the tortoises’ attention, unlike men’s trouser legs.

The tortoises’ reflexes could also work in concert to produce some remarkably flexible and lifelike behavior. For example, although the headlamp had been installed merely to indicate that the tortoises were running properly to their human observers, it also led to some interesting social behavior. If both tortoises were allowed to wander around the same area, they would sometimes detect and be attracted to each other’s headlamps. The detection of light would switch the tortoises into their “beeline” mode, but of course, this required the steering motor to be switched off and hence their headlamps be turned off. The disappearance of the light stimulus would switch the tortoises back to their scanning mode, which meant the headlamps would come on again. The tortoises would thus detect the other’s presence and head toward each other, but this very act would lead to the disappearance of the light to which they had been attracted. The upshot of all this was a performance that looked like some kind of “mating dance,” one in which “the machines cannot escape from one another; but nor can they ever communicate their ‘desire’” (Walter 1953, p. 129). Something similar happened when a lone tortoise was confronted with a mirror. Here, the tortoise would be attracted by the reflection of its own headlamp and switch modes to approach it directly. As in the case above, detection of the light would immediately extinguish the headlamp, resulting in a switch back to the exploratory scanning mode. Of course, the headlamp would then

come on again and be reflected in the mirror which would attract the tortoise, which would switch modes, which would switch off the light, which would switch the tortoise back to exploratory mode, and so on. The feedback circuit set up between the tortoise and the mirror gave every impression that the tortoise was somehow performing in front of the mirror and attempting to inspect its reflection, “lingering, twittering and jiggling like a clumsy Narcissus” (Walter 1953, p. 128). Walter further suggested that “on a purely empirical basis, if it were observed in an animal, might be accepted as evidence of some degree of self-awareness” (Walter 1953, p. 128).

One thing the tortoises were not able to do, however, was learn from their experience. Walter therefore cannibalized Elsie to develop a more advanced mechanical creature that could learn via classical conditioning. This one was named CORA, which stood for COnditioned Reflex Analogue; Walter also gave CORA the Latin name, *Machina docilis* – the “teachable” or “easily taught” machine. Again, Walter was ahead of his time: the design of CORA echoes the “subsumption architecture” invented and used to great effect by MIT roboticist, Rodney Brooks (inventor of the autonomous vacuum cleaner, the Roomba), where different layers of a robot’s control system work in sequence. In Walter’s design, repeated inputs simultaneously occurring in two different sensory channels could be detected by CORA, and once a given threshold of repetition was reached, a link would open between one sense and the other, enabling input to one sensory channel to predict likely input to the other. More concretely, if a whistle was blown every time light was detected, CORA would eventually learn to respond to the whistle as though it was the light. Similarly, if the whistle was associated with colliding with an obstacle and withdrawing, CORA could learn to withdraw based on the sound of the whistle alone. In this way, Walter discovered that he could induce “neuroses” in his creature: if the machine was conditioned so that it would approach light and withdraw from an obstacle, then, on the subsequent sound of a whistle, the robot engaged in a “paradoxical withdrawal,” whereby the “natural” attraction to the light was

extinguished, “and the model can no longer approach its source of nourishment” (Walter 1951, p. 62).

Like the tortoises, it is clear that Walter’s EEG work inspired certain aspects of CORA’s design: “memories” were formed by electrical oscillations in a feedback circuit, and the model “forgot” as those oscillations decayed over time. In addition, when several learning pathways were present, the complex of memories formed could be represented by synthesizing all the oscillations specific to each, which then generated a characteristic wave pattern, much like that seen on an EEG. Walter pointed out that “the implications of these effects are of considerable interest to those who study the brain, for the rhythmic oscillation is the prime feature of brain activity.” Aside from being ahead of his time with respect to his ideas concerning learning and statistical prediction, Pickering (2010, p. 66) also points out that Walter’s CORA was a “virtuoso piece of electrical engineering, in both its design and construction,” which “remains an unexploited resource in the history of cybernetics”: no one has ever attempted to replicate it or take the design further – Walter himself did no more robotics research after CORA. The behavior-based roboticists of the 1980s used neural networks to enable their machines to learn, not Walter-style electronics. Consequently, the focus on oscillations and rhythmic waves that so intrigued Walter, and made his machines so lifelike, has completely faded from view.

Summary: Walter’s Legacy and Impact

Grey Walter’s entire career was focused on pushing the bounds of the possible. He realized the potential of using EEG not only as a diagnostic tool but also as a means of exploring the function of the healthy, living brain in a meaningful way. His theoretical insights on neural connectivity and behavioral flexibility gave rise to the first behavior-based robots, which captured the public, as well as the scientific, imagination. His inventiveness, curiosity, and exuberance were appreciated by all who came into contact with him, inspiring

and creating new spaces of possibility for others to occupy; as it says in his obituary “there is no fitter monument to Grey than the continued tradition of limitless enquiry which survives him at Bristol” (Shipton 1977, p. iv). As so often happens, however, some of his ideas were seemingly just too far ahead of their time, and his achievements have only been fully recognized in retrospect. As Owen Holland (2003) notes, it is somewhat embarrassing that Walter’s work had so little direct influence on the development of modern behavior-based robotics: many of the field’s key achievements had to be painstakingly rediscovered and reinvented by the robotics community. Hindsight, of course, is always 20:20, and it sometimes requires a certain amount of temporal distance to appreciate when and why certain possibilities were not seized on and exploited. Holland (2003) suggests that the tortoise technology may have been too inaccessible to those without a good knowledge of postwar electronics or that his papers and books were too old-fashioned in their tone and style – a deep irony considering their futuristic possibilities. Alternatively, as Pickering (2010) suggests, the fizzling out of Walter-style robotics may have more to do with the lack of an institutional base and support for cybernetics, rather than any inherent flaws in Walter’s approach. One wonders, as Holland (2003, pp. 2117–2118) does, whether “biologically inspired robotics might have advanced further and faster if his work had not been allowed to fade away quite so fast.” Nevertheless, we can see Walter’s influence and legacy in his ability to inspire those who led the behavior-based revolution in robotics during the 1980s. Rodney Brooks (2002), for example, has written of how he attempted to build his own version of *M. speculatrix*, after reading *The Living Brain* as a child in his native Australia.

Whatever the reasons for Walter fading from view in the latter half of the twentieth century, his rediscovery toward the beginning of the twenty-first century means that, as Holland (2003, p. 2119) writes, “his work constitutes a real legacy in the traditional sense: something built up by a previous generation and preserved and passed on so that it can benefit a new generation.” Quite so. Perhaps the best way to conclude this piece, then,

is to give the last word to the man himself (or at least his father, who was the ghostwriter of his books) and his reflections on his adventures in artificial life:

As toys, they refresh the spirit of the laboratory children we all are, leading us to familiarity with more and more elaborate mechanisms. As tools they are trustworthy instruments of exploration and frequent unexpected enlightenment. As totems, they foster reverence for the life they have so laboriously been made to mime in such very humble fashion – and still would foster it even should they, creatures of “sorcery” peering into the dim “electro-biological” future in search of a *deus ex machina*, look up at us and declare that God is a physiologist. (Walter 1953, p. 132)

Cross-References

- [Creative Problem-Solving](#)
- [Genius](#)
- [Invention](#)

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The Possible in the Life and Works of Sigmund Freud

Maximiliano Azcona
Universidad Nacional de La Plata, La Plata,
Argentina

Abstract

Indubitably, Sigmund Freud was one of last century's thinkers who contributed the most to redefining the scope of what *is possible* in the domain of human phenomena. He soundly charged at the picture that the western culture had formed of the human being, installing a field of inquiry and action whose potency stays current to this day. It is not an overstatement to say that psychoanalysis represented one of the most important epistemic torsions in the history of humankind, one whose implications have yet to be fully assimilated.

The objective of this brief entry, concisely addressing a few key conceptual and methodological notions, is to show how the *possible-impossible* axis built a bridge that enabled the Freudian foray into mind and culture, disrupting thus modern representations of what we have been, are and can become, as human beings.

Keywords

Psychoanalysis · Possible · Sigmund Freud · Unconscious

Unconscious

The division of the psyche into what is conscious and what is unconscious is the fundamental premise of psychoanalysis (Freud, 1923a/2004, p. 15).

Eurocentric modernity raised a body/mind dualism that led to considering consciousness as the place of reason, opposed to the universe of

unreason or madness. For a very long time, consciousness was thought as where the motivations that determine individual actions reside, as well as the inescapable resource for knowing one's own mind and the minds of our fellow human beings.

Even though Freud was not the first who used the term “unconscious” to refer to what escapes consciousness, he managed to define it conceptually with an unprecedented level, and set it as a fundamental reference for one of the most consequential theoretical systems of the twentieth century. By defining it very differently than how his forerunners did, the *unconscious* became an instance inaccessible to consciousness, but which manifests itself in a series of phenomena such as *dreams*, *lapses*, *jokes*, *symptoms*, and *cultural* expressions.

Despite the nonlinearity of Freudian conceptual evolution – so that no historical periodization fits perfectly –, three successive moments can be recognized in the case of *Unbewusste*: between 1893 and 1900, with the “dynamic unconscious” postulate; between 1900 and 1923, with the growing complexity of what could be called the “unconscious system”; and from 1923 onwards, with the “second topic” structural model. Notwithstanding these successive modifications, the term always referred to a decentered conception of subjectivity and affective processes, which continues to be the most radical premise in the contemporary psychoanalytic movement. It is not possible, nor will it be, – Freud argued – to explain mental phenomena without the concept of unconscious processes (Freud, 1915a/2004). This impossibility, far from fully disproved, is becoming more and more evident.

Psychoanalysis, as a theory and praxis, was made possible by Freud's original discovery of the dynamic role that the *defense* plays in the etiology of hysteria: “thus we obtain our concept of the unconscious from the theory of repression. The repressed is the prototype of the unconscious for us” (Freud, 1923a/2004, p. 17). It is an operation mode that involves repressing pathogenic memories along with a constant energy loss, which partially fails and results in the repressed representations returning through symptom formation. Such a mechanistic model became, due

to its explanatory power, a basic component of the Freudian program's core.

Freud came to understand that all psychic processes *are unconscious themselves* and that only some of them, without gaining access to consciousness, nevertheless become consciously apprehensible (so they can be called preconscious), and that among these, only a few become an object of consciousness, although always in a transitory manner (Freud, 1915a/2004). This is why he declared that "the unconscious is the true reality of the psyche; in its innermost nature it is as much unknown to us as the reality of the external world, and it is as incompletely presented by the data of consciousness as is the external world by the communication of our sense organs" (Freud, 1900/2004, p. 600). Namely, the unconscious can only be known through its effects, and its workings can only be known after it has "undergone transposition or translation into something conscious" (Freud, 1915a/2004, p. 161). Initially, Freud thought that that was the best definition of his new therapeutic: "Psychoanalytic work shows us every day that translation of this kind is possible. For this to come about, the analysand must overcome certain resistances – the same resistances as those which, earlier, made the material concerned into something repressed by rejecting it from the conscious" (Ibid.).

Along with the development of his second topic, Freud did not abandon the first one but conceived the psychic organization in a different way. These topical models partially overlap, without there being a univocal correspondence between the instances presented after 1920 and the three systems defined during the first topic – there are areas of the ego and superego as unconscious as the id. These developments made the "unconscious" come to have a rather qualifying connotation, an adjective for certain psychic processes.

Drive

In a way, our drive doctrine is our mythology. Drives are mythical beings, grand in their indetermination. In our work we cannot forego them for an instant, and yet we are never sure that we see them clearly (Freud, 1933a/2004, p. 88).

Freud used the term *Trieb* to designate "the work demand made upon the psychic apparatus" (Freud, 1915b/2004, p. 117) that characterizes all mental processes that tend toward an end. Unlike instincts, which are intermittent behaviors predetermined by biological inheritance, the drive is defined by its partiality, its constant push, and its lack of fixed direction. Every drive has its source in a body excitation (state of tension) and its purpose is to suppress this state of tension by means of a contingent object. In his work *Three Essays*, he inquired whether the drive is a somatic force or a psychic energy: he found it to be a borderline concept, articulating between the organic and the psychic, and he resorted to the metaphor of the "representative" to explain this nature (Freud, 1905a/2004).

Our Viennese began explicitly using the term *Trieb* in 1905 to characterize human sexuality and its unconscious aspects. Based on the study of perversions and infantile sexuality, he was able to disprove the popular opinion that confuses sexuality with genitality and that attributes a predetermined object and purpose to the sexual drive. The decomposition of the drive into its pregenital elements and its integration within an evolutionary panorama of sexuality helped establish a conceptual pillar for all his subsequent developments.

Despite its successive modifications, Freudian drive theory was always sustained within a dualism characterized by conflict. The initial model included *sexual drives* and *self-preservation drives*, whose dispute lies in the incompatibility of the ego's tendency toward body and identity unity, on the one hand, with the partial and autoerotic libidinal aspirations on the other hand. Later on, by introducing his conjectures about *narcissism*, he argued for the existence of a duo of ego-libido and object-libido, defining the conflict as how both tendencies differ and distribute the amount invested in one to the detriment of the other. Lastly, with the so-called "Turning Point of 1920," he proposed a final classification that differentiated *life drives* and *death drives*, based on the relocation of the "pleasure principle" as a secondary function with respect to a more primordial psychic regulation modality. He speculated that libido – ego and object drives – responds to a

tendency of the living towards unity and synthesis, while the from then on defined as *death drive* refers to the vast forms of human self-destruction that represent the tendency of the psyche of returning to a previous state of inorganic existence, which will end up designating, more than just a type of drive, the principle of every drive. Regardless of the philosophical conception underlying this dualism and the speculative demands that generated it, the explanatory power of *Beyond the Pleasure Principle* helped Freud to address a series of until then paradoxical clinical phenomena, such as repetition compulsion, traumatic dreams, children's play (Fort-Da), masochism and negative transference (Freud, 1920/2004). Additionally, it also helped him to later delve into a rewarding theorization on certain socio-anthropological aspects such as human aggression (Freud, 1924/2004, 1933b/2004) or cultural discontents (Freud, 1930/2004).

Despite the various conceptual traits that *Trieb* entailed at different periods of Freud's theoretical elaboration, it is a meta-psychological term that always refers to the mystery of desire, one that cannot be reduced to any causalist or hermeneutic ontology, but that is inescapable for any claim of understanding the innermost parts of human events that are manifested in suffering. Admittedly, the *witch* invoked by Freud in his speculations about the reasons and causes of psychic phenomena was in tune with the epistemological horizon of the natural sciences of his time. However, more than a century later, we do not seem to be in a better position to assess whether biology will ever be able to provide a more solid basis for the *Trieb* notion. On the other hand, it can indeed be said that the uses of this theorization have provided an explanatory stronghold against reductionist tendencies, be it hereditary biologism – where Freud also drew from – or psychology of consciousness, which are renewed in our days.

Transference

The transference, destined to be the greatest stumbling block for psychoanalysis, becomes its most powerful auxiliary when it is managed to collect it in each case and translate it to the patient (Freud, 1905b, p. 103).

The concept of “transference” designates the unconscious process of updating childhood's affective history, which Freud discovered and conceptualized as a central tool of psychoanalytic treatment.

Early on, Freud used the French term *transfert* in an article on hysteria for the famous Villaret's medical dictionary, referring to the displacement of the hysterical symptom in the body. In *Studies on Hysteria*, elaborating on the obstacles that can occur within the therapeutic relationship, he used the concept of “false link” to discuss the way in which the person of the analyst became involved in the patient's lived experiences (Freud & Breuer, 1895/2004). Later, he emphasized that becoming enamored with the analyst is a central component of transference, embodying both the driving force of the cure and the main resistance to its pursuit (Freud, 1914b/2004). Furthermore, he insisted that the analyst's response to the demand for love should not be conceding: “to yield to the demands of the transference, to fulfill the patient's wishes for affectionate and sensual satisfaction, is not only justly forbidden by moral considerations but is also completely ineffective as a technical method for attaining the purpose of the analysis” (Freud, 1926a/2004, p. 212). The abstinence ethical precept is substantiated by theory, since frustrating the patients within the transference orbit enables them to recall, re-update and address their conflicting drives. The analyst proceeds with the intent of waging a “perpetual struggle with his patient to keep in the psychical sphere all the impulses which the patient would like to direct into the motor sphere” (Freud, 1914b/2004, p. 155).

In his work *Remembering, Repeating and Working-Through*, Freud introduced the notion of “transference neurosis,” which designates how the patient repeats, in transference with the person of the analyst, childhood conflicts that they cannot remember. Repetition is explained as the staged return of what refuses to be remembered, and that is why it must happen even if the patient experiences it as his symptoms getting worse, since “it is not possible to take down an enemy who is absent or not close enough” (Freud, 1914a/2004, p. 154). The analyst's challenge is to sustain the transference without reciprocating it, and wait

for the symptoms to organize themselves within, intervening on the resistances and encouraging the working-through: “this working-through of the resistances (...) is a part of the work which effects the greatest changes in the patient and which distinguishes analytic treatment from any kind of treatment by suggestion” (Freud, 1914a/2004, p. 157). In this sense, the “false link” with the person of the analyst becomes an indispensable mistake for the expected course of all psychoanalytic treatment: transference is not so much an analysis tool as the very ground on which the cure takes place.

Even though Freud elaborated on its workings within the analytic relationship framework, he always admitted that transference is a strange phenomenon of intersubjective communication, one in which the conflict of impulses and fantasies of significant links from the past are reissued in the present relationships. Thanks to the notion of transference it was possible to shed light on how all kinds of human links are created and sustained, especially those based on some type of asymmetry – teacher-student, doctor-patient, leader-masses, etc. At the same time, it helped appreciate the role of the historical-social matrices, individually and collectively, to better understand not only the present, but also future relational possibilities.

Psychoanalytic Method

Basing myself on the ‘cathartic’ method introduced by Josef Breuer, I have in recent years almost completely worked out a therapeutic procedure which I propose to describe as ‘psychoanalytic’ (Freud, 1898/2004, p. 275).

Freud worked by evolving his ideas so they provide a more satisfactory answer to the procedural and theoretical problems he was working on. In his early years, he made use of the moral and medical treatments inherited by the tradition of psychiatrists and neurologists: rest, whirlpool baths, nutrition, electricity (Freud, 1887/1986, p. 38). While he used them in combination, and even continued using them as his own technical inventions advanced, he declared their

insufficiency and linked it to his movement’s inception: “Psychoanalysis was born out of medical necessity. It sprang from the need for bringing help to neurotic patients, who had found no relief through rest-cures, through the arts of hydropathy or through electrotherapy” (Freud, 1919/2004, p. 255).

The heated controversy between the French schools of *La Salpêtrière* and *Nancy* framed Freud’s foray into hypnosis in December 1887, with which he said he had attained “all kinds of small but amazing achievements” (Freud, 1887/1986, p. 5) and that at first, he combined with the aforementioned traditional techniques (Freud, 1891/2004, p. 143) for the sake of two objectives: to eliminate pathogenic memories and impose different ideas on the patient. This course of prohibitive hypnotic suggestion, as direct as unsatisfactory, was surpassed when the Viennese continued attempting to approach the “symptoms” causes and plunged into the application of the “cathartic method” created by Breuer. This meant “removing the result of the ideas that have not been abreacted, either by reviving the trauma in a state of somnambulism, and then abreacting and correcting it, or by bringing it into normal consciousness under comparatively light hypnosis” (Freud, 1893/2004, p. 186). The next step was using catharsis unmediated by hypnosis, with the purpose of treating what had already begun to be understood as the result of conflict and defense, which would end in an irreversible epistemological transition from the observation field to the listening field.

By extending the idea of physical trauma to the orbit of the psyche, he conceived “traumatic situations” associated to the patients’ sex life which caused the psychoneurosis *a posteriori*. This “seduction theory,” an intermediate link in the Freudian conceptual chain, was developed until the place of “fantasies” and “screen-memories” could be explained and, consequently, the role played by infant sexuality and the Oedipus complex in psychic reality. The realization that “it is quite hopeless to try to penetrate directly to the nucleus of the pathogenic organization” (Freud & Breuer, 1895/2004, p. 297) concluded in the development of the “free association” method,

made possible not only by the clinical experience obtained with his patients but also from his “self-analysis” experience. This new technique, “far superior to the old, and indeed there can be no doubt that it is the only possible one” (Freud, 1905b/2004, p. 11), was elaborately described in the second chapter of his magnum opus on dreams but only in 1909 would it be defined as the “main rule of psychoanalysis” (Freud, 1909/2004, p. 28). It was based on the conviction that the free will apparently involved in patients’ spontaneous occurrences was actually illusory, since it “reveals that it is strictly determined in a way that would really never have been thought possible” (Freud, 1901/2004, p. 234).

This decisive modification of his technique was accompanied by important theoretical and procedural formulations, such as the worth of “interpretation” and “construction” of unconscious representations and their conceptualization as “overdetermined” phenomena manifested “retroactively.” These last two aspects (Nachträglich and Überdeterminierung) reveal a philosophical conception of temporality and causality that was profoundly disruptive with the linearity of the scientific models of the time and that even today can be regarded as one of the axes that best display the complexity of mental phenomena mechanisms.

Despite the passing of the years, Freud invented a method at the beginning of the last century whose essence remains in force as one of the most fruitful paths for understanding and modifying countless mental conditions. This procedure made all forms of contemporary psychotherapy possible, since nowadays there does not seem to exist any recognized psychotherapeutic method, either with claims of continuation, opposition, or improvement, which is not somehow related to Freudian psychoanalysis.

Conclusion: Psychoanalysis, an Impossible Profession

Its [psychoanalysis’] original significance was purely therapeutic: it aimed at creating a new and efficient method for treating neurotic illnesses. But

connections which could not be foreseen in the beginning caused psychoanalysis to reach out far beyond its original aim. It ended by claiming to have set our whole view of mental life upon a new basis. . . (Freud, 1925/2004, p. 228).

Psychoanalysis allowed a better understanding of the similarities between the paths that lead both to neurosis and to artistic, scientific, philosophical, or religious creation, generating a complete reformulation of the health-disease binomial. Passing from the clinical to the cultural was “an irresistible temptation and, indeed, a scientific duty” (Freud, 1919/2004, p. 257) that was woven in an extraordinary warp of knowledge about human affairs. The Enlightenment affiliation of Freud’s education allowed him to make use of the scientific knowledge of his time to end up establishing a revolutionary discipline that, even today, stands *against* the most deeply rooted philosophical and anthropological assumptions of modern Western culture.

The tripartition in which Freud defined psychoanalysis – “a procedure for investigating the unconscious, a method for treating neurotic disorders and a nascent scientific discipline” (Freud, 1923b/2004, p. 231) – did not keep him from considering it, along with education and government, an “impossible profession,” insofar as “one can be sure beforehand of achieving unsatisfying results” (Freud, 1937/2004, p. 249). Admittedly, such impossibility does not make psychoanalysis – neither teaching, nor politics – unattainable, but refers to the impediment of possessing a prior know-how that guarantees the total realization of its desired results. Each encounter between human beings that occurs within the analytical device renews this essential uncertainty, preserving it from any aspiration of becoming a mechanically applicable technology. In a digitized and commoditized world in which not a few dream of psychotherapeutic recipes for a standardized and “efficient” approach to treat all psychopathologies, such impossibility is perhaps one of its greatest virtues.

Thus far, time seems to be proving Freud right in that “the future will probably attribute far greater importance to psychoanalysis as the science of the unconscious than as a therapeutic

procedure” (Freud, 1926b/2004, p. 253). Despite the typical adversaries who long for its annihilation, psychoanalysis is very much alive and in thriving disciplinary growth. Deep down, we all know that to dispense with it would not only neglect a successful approach to various psychic suffering modes, but fundamentally one of the most prolific fields and the most promising methods of elucidating the human creation processes, in their broadest possible sense.

Cross-References

- [Apperception](#)
- [Determinism](#)
- [The Possible and Donald Winnicott](#)
- [The Possible in the Life and Work of Jacques Lacan](#)
- [State of Consciousness](#)

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Possible in Visual Arts

Julianna Sandholm-Bark

Webster University Geneva, Geneva, Switzerland

Abstract

This entry begins with an attempt to classify the broad term of the “visual arts” in terms of a closed versus open system. In the paragraphs that follow, I’ve made some attempt to retain

some kind of chronology, as I discuss various distinctive aspects of the visual arts. Starting with paleolithic cave painting, control of technique, and mastery over medium, the idea of art as poxy, art and nation building, art as commodity, and concluding some amazing artists out there who are pushing our idea of what art is.

Keywords

Visual arts · Art · Artist · Art making · Possible

Defining the Visual Arts

At the broadest level, the term “visual arts” encompasses a wide scope of artifacts or acts – either material or immaterial – from every historical period and geographical area of human civilization. These include objects such as Greek pots, Roman sarcophagi, Flemish tapestries, Islamic calligraphy, coins and carpets, Japanese swords and vessels, Aboriginal boomerangs and dot paintings, North American quilts, Eskimo kayaks, and Yoruba ibeji, to name just a few examples. For many people, art continues to be a tangible entity, such as a painting, a sculpture, or a photograph. When placed in a museum, objects such as these play an important role as icons of a particular cultural tradition.

Since the 1960s and 1970s, the visual arts have continued to evolve in new, and sometimes less material directions. Today, the scope of visual arts production has become more diverse than ever and includes not just material artifacts but also immaterial acts (e.g., performances and participatory art) that are ephemeral and which must be documented to be seen after the fact. These intangible kinds of art resist commodification and rely on a new kind of relationship with the viewer who is expected to be an active participant in the process of art making and/or meaning making. As the visual arts of the twenty-first century have become more collaborative and participatory, they have become more difficult to define. Visual artists working today employ a great variety of mediums. While some artists continue to work in traditional mediums, others use new materials (e.g., technology) or seek inspiration from other

disciplines, such as politics or science. Some have become superstars whose work is featured at the most prestigious art fairs of the world. Others labor in conditions of quasi-anonymity, sometimes thanks to the support of mission-driven art organizations. Whatever the circumstances surrounding an artist’s artistic impulse, the existence of the innumerable artworks that populate our institutions, public spaces and homes serve as evidence that human beings have always had an inherent need to create art – art, that is to say, something that extends beyond and complements our everyday reality.

I teach a course called Current Art To Undergraduate Students and I generally like to start this course with Gombrich’s well-known quote that “There really is no such thing as Art. There are only artists” (Gombrich 1995). Students are not always aware that there are people out there who make a living as professional artists. Much of what we do in class is learn about how artists do what they do, who they interact with, and what needs to happen in order for their work to attain cultural and commercial value. Much of my course seeks to define the meaning of art according to a narrow and institutional view of the art world. This narrow view defines the artist as a particular kind of human being who desires to be an artist above all else (or sometimes the kind of human being who cannot do anything else), who (often, though not always) gets some kind of art education, and who then emerges as a professional artist who shows and sells work in a neatly prescribed cultural context. According to this institutional view, a work of art undergoes a process of validation and value creation by social consensus. The group charged with assigning the artwork its value in this tightly regulated system is made up of strategically placed institutions and individuals – the gatekeepers of the art world – who enjoy positions of power and authority. It also goes without saying that these institutions and individuals will only consecrate those artworks that subscribe to their own view of what art should be and which will not compromise their own positions of power or cause the downfall of the art world as it exists. According to the institutional view, artists are empowered by specific institutions and individuals who must allow

them into the “promised land,” “the land of greater possibility” of the art world. If the conditions are favorable, an artist’s work will become seen as sacrosanct and enter into the cultural Walhallas of our world. If the conditions are less favorable, however, the artist will be driven to question their own purpose in art making. The cultural topoi of “struggling artist” or “starving artist” have long been commonplace. Art historical narratives are replete with stories of struggle followed by consecration. Think of the story of Vincent van Gogh, for example. Stories like these are fueled by capitalism, as they often contribute to the economic system of value creation.

There is another view to be had according to which art is a more open and empowering system. Art as something that is accessible to all and something of which everyone is capable. After all, aren’t we all born with the ability to make marks on a piece of paper or to shape a piece of clay? Anyone who has ever observed a five-year-old child making art will recognize that this is art making in its purest form. The child is entirely absorbed by the moment, guided by instinct, without any apparatus of self-censorship at play. Art in this context is made for its own sake, for the sake self-expression. According to this view, art can be created by anyone, as artistic potential exists in each one of us.

Mysterious Beginnings: The Primeval Art Impulse

In 1940, one of the greatest discoveries of Paleolithic cave painting showing 1500 engraved wall figures and 600 painted animals, dated to ca. 15,000 BC, was made in Lascaux, near Montignac, France. This discovery completely changed our perception of what humans were capable of, and profoundly disrupted any sense of artistic superiority over our Paleolithic forebears. Moreover, this incredible discovery confirmed the idea that there was something essential and intrinsically human about art making.

There can be no certainty about why these cave paintings emerged or what function they

performed for the people who created them, though many theories have been proposed. One theory is that these images were intended as decorations. According to other theories, such as the “hunting magic” or “fertility magic” theories, the depictions of real creatures would favor their multiplication, creating a food source for hunters in the future. Another view is that the images are to be read on a symbolic level and that they hold shamanistic significance. In Lascaux, the cave’s only human figure, who has a bird’s head and erect phallus, and is involved in a hunting scene, has suggested to scholars that the human figure serves as a point of contact between the human and spirit worlds, a task usually performed by means of trances and hallucinatory experiences. Some scholars have drawn parallels between Paleolithic cave art and the visual evidence of shamanistic practices found in other locations, for example, on San rock art in South Africa (Lewis-Williams 1987).

While the origins of the first artistic human impulse are likely to forever remain a mystery, these early vestiges of human creativity are irrevocable evidence that art making is an essential human act that resides in a deep-set human need to reinvent and re-envision the world in which we live.

While we might not know much about why humans decided to represent the world, it is fascinating to observe the unity and coherence that characterizes many of these early representations that have survived. It is striking that we have examples of earthenware pottery dating back to the Prehistoric period that are decorated with organic or geometric motifs, suggesting that form and function were both seen as important in the production of the most innocuous of day-to-day objects. The painted pottery found at the sites of Samarra and Halaf in Mesopotamia (a. 6000–5000 BC) and the decorated pottery excavated in Cishan and Pelingang, China (ca. 7000–5000 BC) are two such early examples. One can also find evidence of strong decorative scheme in larger artifacts, such that elaborate wall paintings and modeled reliefs of Catal Höyük in central Anatolia (c. 6900–c. 6500 BC). Artifacts such as these, which historians associate with the

rise of agricultural and sedentary living, are striking for their sophisticated sense of design. The human capacity for the creation of visual design perhaps need not surprise us, as humans seem predisposed to respond to auditory stimuli such as rhythm and rhyme in spoken language, for example. Why would a similar predisposition not exist in the case of visual language as well?

The religious significance of early images produced by our ancestors continues to be a subject of debate in research among anthropologists, archeologists, and art historians. Contemporary art critic Jerry Saltz writes compellingly about the power of images, about the power of art as an amulet of supernatural significance: “for almost its entire history, art has been a verb, something that does things to or for you, that makes things happen. Holy relics in churches all over the world are said to heal. Art has been carried into war; made to protect us, curse a neighbor, kill someone; been an aid in getting pregnant or preventing pregnancy. There are huge, beautiful, multicolored, intricately structured Navajo sand paintings used in ceremonies to ask the gods for assistance. The eyes painted on Egyptian sarcophagi are not there for us to see; they are there so the interred person can watch. The paintings inside the tombs were meant to be seen only by beings in the afterlife” (Saltz 2018). Saltz’s emphasis that art can do something (as opposed to just be) can be traced back to the ideas of John Dewey, who had emphasized art’s role in enabling people to perceive, manipulate, or otherwise grapple with reality. Since the beginning, art has been used to infuse our life with imagination and possibility and connect us to another order or modality.

Gut-Grabbing Artifice

I have often heard it said that the visual arts are less accessible because their appeal is less visceral than say, words, or music. The visual arts are often seen as “too intellectual” or as involving too many barriers to interpretation. But just as frequently, the spectacle offered by art – especially by optical realism – can be equated with a powerful visceral experience too. We can all relate to the sense of

wonder produced while in contact with an example of unfathomable technical mastery, so much so that it makes us literally pause to take a breath. For me, this experience occurred when I came across a painting called *Three Rooms* (2000) by Christopher Gallego (Fig. 1) exhibited at Hirschl and Adler gallery in New York in 2001. I distinctly remember standing there dumbfounded, marveling at this phenomenal example of spatial illusionism. The three rooms of the title are represented *enfilade*, with one in the foreground, another in the middle ground, and the third in the background. It is almost as if this interior were a landscape divided into three horizontal bands, each of which is marked with a cylindrical object: a footstool, a cylindrical object, and a chair. The painting seems like a textbook example of both linear and atmospheric perspective. Linear because of the way the rooms and the doorways are arranged to create a sense of depth, and because of the way our eye travels “up” the floorboards towards the back of the room and horizon line. In the backroom, which is fuzzier because the artist was applying the rules of atmospheric perspective, we see a window through which we can see the indistinct greenery of a garden. Most of the space in the painting is devoted to representing the middle room, which is sparsely furnished with a table and two brocaded armchairs on either side. The blue cup on the table echoes the blue of the window frame in the backroom as well as the blue of the footstool in the front room, giving the whole painting a sense of harmony. I know of no other painter whose work elevates the prosaic aspects of daily life through a sensuous attention to color and surface detail.

Technical mastery over medium in the service of optical realism causes a sense of amazement in the viewer. In Western culture, an artist’s critical fortunes have traditionally been strongly connected with their particular ability to imitate empirical reality. Imitation (*mimesis*) was a prized quality that earned countless artists the accolades of their contemporaries. Among the many accounts of how artists earned the reputation of magicians or tricksters, perhaps the most iconic is Pliny, the elder’s account of the contest between



Possible in Visual Arts, Fig. 1 Christopher Gallego, *Interior with Three Rooms*, 2002, oil on canvas, 90 × 72 inches, New Britain Museum of American Art

Zeuxis and Parrhasios, according to which Zeuxis's grapes were rendered to such a degree of lifelike perfection that the birds themselves were fooled, and flocked down from the sky to peck at the painted fruit. According to Giorgio Vasari, Masaccio was the best painter of his generation because of his skill at imitating nature, recreating lifelike figures and movements as well as a convincing sense of three-dimensionality. "Vraisemblance" was also the life-long project of the eighteenth-century Swiss artist Jean-Etienne Liotard, who used the medium of pastel to capture the textures of skin, hair, and fabrics, such as silk, satin, velvet, and lace, as is exemplified in his portrait of Maria-Fredericke van Reede-Athlone (Fig. 2).

The invention of photography is generally thought of as a watershed that marks a time when the quest for *vraisemblance* became obsolete for artists. But optical realism continues to fascinate people today despite the existence of photography, largely because this form of art making has become rarer in the context of high-end

contemporary art exhibition venues (it is more commonplace at local or regional art fairs). While art academies in the beaux arts tradition continue to exist, they largely do so outside of Europe. The high-profile art schools in New York and London have by and large given up on optical realism as a learning outcome for their students, presumably because there is no market for it in the commercial field. And yet there are a great many working artists who labor in pursuit of this goal; examples include the painters Alan Lawson and Marie Thorndahl, and the sculptors Duane Hanson and Ron Mueck.

Participatory Viewing

Obviously, not all art is about representing the world that surrounds us according to the rules of optical realism. For a lot of artists, the accuracy of the depiction matters less than the process that goes into making the art, or the process that emerges from the viewing experience. This section considers the emotional and experiential potential of artworks that is made possible by the viewer's subjectivity.

From the perspective of many devoutly religious people, icons possess a special talismanic power because of the person they represent, but their divine character can also be explained through the spiritual process that the artist undergoes before creating the icon. The period of preparation involves a series of spiritual exercises (praying, fasting, etc.), which, once complete, allows for the act of creation, or rather "transcription" by the artist through divine intervention, to take place. The resulting image is believed to contain sacred, miraculous properties, according to Christian tradition, which can have a real impact on the devotee. The portrait of the saint is a stand-in for the real saint, not in the sense of physical likeness, but in the sense of true image of holiness that brings a life-saving belief.

Much secular portraiture can likewise be associated with the desired or perceived intention to capture the real "essence" of a person. Portraits of monarchs were venerated as surrogates of real

presence. Marriage portraits were presented as stand-ins for the real person, and miniature portraits of loved ones were worn as tokens of affection or mourning (Pointon 2001). Thus, there is a link that connects amulets worn by our ancestors, with portraits and relics of saints, to more secular forms of portraiture showing a beloved or even an object that serves as a stand-in for the beloved, such as a lock of hair.

To take this connection still further, one can draw a parallel between traveling for miles to a site of pilgrimage to see the relics of a saint, with a different kind of pilgrimage, which is cultural tourism. Think of the people flocking outside the Metropolitan Museum of art in the 1960s waiting in line to see the Mona Lisa. Museums – those repositories of cultural value – seem to have replaced cathedrals as sites of worship.

There are examples of artists active today who fulfill the role of spiritual healer of sorts. Among the most prominent of these is the performance artist Marina Abramovic, whose deeply personal projects aim to *elevante* and, ultimately, transform both herself and the viewer. Artworks can also rehabilitate an untold story of a person or a place. An example of such a project is Janet Cardiff and George Bures Miller's *Alter Bahnhof* video walk (2012), which was designed for the old train station in Kassel, Germany, as part of DOCUMENTA 13. During the 1940s this station was the departure point for a large number of Jews being shipped to concentration camps. The video takes the spectator for a walk through the station by means of voice prompts delivered via an iPod. The voice-over by Cardiff leads them through the building, providing instructions on the walk and commentary on personal experience and memories. An alternate world opens up where reality and fiction meld in a disturbing and uncanny way. The participants watch things unfold on the small screen but feel the presence of those events deeply because of being situated in the exact location where the footage was shot. As they follow the moving images (and try to frame them as if they were the camera operator), a strange confusion of realities occurs. In this confusion, the past and present conflate, and Cardiff and Miller guide us through a meditation

on memory and reveal the poignant moments of being alive and present.

Another artist who brings unresolved collective trauma and storytelling into his working process in the interest of rebuilding community is Krzysztof Wodiczko (b. 1943). His large-scale video projections in the urban space memorialize collective experiences of war (e.g., Hiroshima, 1999) or gender-based violence (e.g., his Tijuana Projection, 2001), among other topics. Wodiczko's projects are an oral history archive and memorial to the suffering endured by people who have become forgotten by history. His projections give a voice to people who have become disenfranchised and give the general public a means to be more aware of the process of history and the harmful impact it can have. His latest project, called *News*, is a collaboration with 12 refugees who have been resettled in the USA; their filmed likenesses and spoken narratives superimposed on a public historic monument of an unsung union hero of the civil war.

Artistic invitations to the public to engage with history can also have a more lighthearted and playful appeal. An example is Jeremy Deller's *Sacrilege*, a bouncy replica of Stonehenge created for the 2012 Olympic games. The piece invites the viewer to step into the installation and literally bounce in it, resulting in a sense of euphoria and surprise. This kind of artwork, which resembles a toy and likens the exhibition venue to a playground, might be formally far-removed from the icons that we were considering at the beginning of this section; still, what these works have in common is the intense emotional and physical response that a viewer might have as a result of engaging with the artwork.

The Rise of Individuality and Innovation in the Visual Arts

The power of the artist as a storyteller explains why artists have been recruited for centuries to work on behalf of state and religious institutions. One can argue that perhaps the greatest driver of possibility in the visual arts resides in the creation of idealized images of power, which aim to give a



Possible in Visual Arts, Fig. 2 Jean-Etienne Liotard, *Portrait of Maria Frederike van Reede-Athlone at Seven Years of Age*, ca. 1755–1756, pastel on vellum, Getty Museum of Art. https://commons.wikimedia.org/wiki/File:Jean-Étienne_Liotard_-_Portrait_of_Maria_Frederike_van_Reede-Athlone_at_Seven_Years_of_Age.jpg

group people the ability to define themselves through a visualization of their own identity and history.

In this context, one can think of vast architectural and sculptural ensembles such as the Apadana in Persepolis – an interior composed of 72 columns and monumental stairways, all of which were carved with hundreds of figures, all bringing tribute to the Persian king. These capture the glory of the Persian empire. Other examples of monumental artifacts used as a canvas for telling the story of the greatness of state include the column of Trajan (which depicts the war between the Romans and the Dacians ca. AD 100) and the Bayeux tapestry (which tells the story of the Norman invasion of England in 1066). Narrative cycles in Christian art – such as those by Giotto in the Scrovegni chapel (c. 1266) gave the majority of an illiterate population the possibility of accessing religious narratives for the purpose of collective and private worship.

Institutional propaganda machines of the visual kind continued to exist throughout seventeenth-, eighteenth-, and nineteenth-century Europe. A notable example is Peter Paul Rubens' *Marie de Medici cycle*, composed of 24 paintings commissioned in 1621, which illustrate the life of Marie de Medici and also pay tribute to Marie de Medici's exemplary qualities as a ruler.

While the nation-building role of art still plays an important role for art institutions today (also because it fuels funding), we are used to thinking about the visual arts as something that emerges out of an artist's subjectivity in the private arena of their studio.

When one thinks of the rise of individualism and subjectivity in the visual arts, at least in the context of Western art, one invariably thinks of the late eighteenth and early nineteenth centuries. It is a beguiling task to track the earliest visual manifestations of subjectivity during this era. Francisco Goya (b. 1746) is a fascinating example of an artist for whom there is a body of work that one associates with the artist's public persona – his royal portraits, for example – and another, much more private and mysterious body of work that seems to have produced out of the painter's deeply subjective and tormented visions. We also have a great many examples of highly idiosyncratic self-portraits that seem to be evidence of this era's highly introspective mood. There is a host of self-portraits where earnestness and self-scrutiny are staged in a manner that is alien to earlier portraiture, such as those created by Philipp Otto Runge, Asmus Jakob Carstens, Samuel Palmer (Rosenblum 1975), or Jean-Etienne Liotard (Bark 2008).

The twin concepts of artistic individuality and innovation have become commonplace when discussing the art from 1850s onwards. Art historians organize their narratives of art of the period from 1850 to 1950 around the concept of the "avant-garde," a term which refers to a group of people working in experimental, radical, or unorthodox ways. The attitudes of struggle and rebellion have come to punctuate the narratives of artists such as Gustave Courbet, Rosa Bonheur, Edouard Manet, Henri Matisse, Pablo Picasso, Andy Warhol, Jeff Koons, Damien

Hirst, etc. What gave rise to new possibility in the visual arts during the 1850s was the rise of the technologies of photography and film, which forced visual artists to come up with new ways for art to push the boundaries of representation. Much has been written about the moment when form (as opposed to content) became the main concern of artists. The way in which grappling with form became a way of reproducing the process of looking is illustrated by Cubism, for example.

Certainly, one of the things that twentieth-century art and narratives about it have brought to bear is the importance of form in the visual arts. It can be tricky to distinguish a beautiful subject, on the one hand, and a beautiful execution, on the other. Consider some of Francis Bacon's paintings, for example. Most people would consider his distorted self-portraits (e.g., *Self-portrait* of 1972) or figures posed in geometrical cages as pictures of horror and despair. But while the subject of his paintings can at first appear brutal and ugly, anyone who has seen Bacon's paintings in a museum would agree that there is nothing more beautiful and luminous than the way in which they are painted. There is much nuance and texture in Bacon's work, and one might wonder if the aesthetics of his brushwork serve as a kind of antithesis to his subject matter. Jenny Saville's work can also be interpreted in this way. Like Bacon, Saville is a masterful handler of oils who uses them to represent subjects that can be difficult to fathom. Her *Shadow Head* is a case in point.

The Move Towards Commodification, and Away from it

The history of art in the first half of the twentieth century is a favorite of students as the period is marked by a clearly identifiable linear progression characterized by a rapid success of different movements and -isms, each one responsible for its own definition of art.

Then came Marcel Duchamp's decision to call a mass-produced object "art." A rift just as momentous, which Arthur Danto would later associate with "the end of art," occurred when

Andy Warhol appropriated mass-produced and depersonalized objects such as a Brillo box or a Campbell's soup can, which he called art. At around the same time, Sol Lewitt declared that the artist's job was to come up with a template enabling anyone to make art. These rifts and all that they brought to bear on the art world are a lot more difficult for students to understand.

The art of today is no longer characterized by an -ism (except for perhaps pluralism). Today there are no more -isms, only individual artists.

During the 1990s, contemporary art became a hugely popular subject in the public media. Art has never been so global, nor has it ever been worth quite so much money, two phenomena that have prompted a proliferation of museums, galleries, foundations, and art fairs peddling art at the high, middle, and low ends of the market. The number of new collectors of art worldwide has exploded, and many of them have a very real impact on the creation of artists' careers and even art movements. An oft-named example of such a clouted individual is Charles Saatchi, who first made his name as an advertising executive and who became the patron of the "Young British Artists," who included artists like Damien Hirst the Chapman brothers, Mark Quinn, Marcus Harvey, Sarah Lucas, and Tracey Emin. The relatively quick rise to prominence of these artists thanks to one patron who caused a wave of patronage suggests that art history has never been made as quickly as it is today, and wealthy collectors are playing an important role in its making.

The narrative of contemporary art at the high end of the market has become familiar. Contemporary art has become a desirable way for the top 1% to invest their disposable income. At this level, the art world resembles the industries of real estate or private banking. A number of art dealers work as specialized brokers who are available to meet the needs of their clientele. An example is Larry Gagosian who opened his first gallery in Los Angeles in 1980. From 1989 to 1996, he co-owned a gallery in New York with the renowned dealer Leo Castelli, representing artists like Ellsworth Kelly, Roy Lichtenstein, and Bruce Nauman. After making some

spectacular sales (he famously sold a Mondrian for 12 million and a de Kooning for 137 million), today he represents leading international artists like Jeff Koons and Takashi Murakami, and owns 17 exhibition spaces worldwide. Gagosian has also started to collaborate with museums, providing instrumental support to many exhibitions and artist projects, including *Ceiling* by Cy Twombly in the *salle des bronzes* at the Musée du Louvre, a permanent commission that was unveiled to the public in 2010. Through initiatives such as this, there is a sense that high-end art galleries are in the process of monopolizing ever-larger sectors of the art market and the art world. The question is will this monopolization result in a homogenization of contemporary art production?

It is easy to look around at the commercial art landscape today and come away with an impression that art only exists as a commodity that serves the investment needs of high net worth individuals. Visit an art fair like Art Basel and there is a distinct sense that art has lost its accessibility. The kind of art one sees at these high-end fairs is heavily guarded and spectacularly priced. Whenever my students and I go to visit the fair as part of the current art class I teach, the takeaway is always a sense of incredulity. “How can an artwork cost that much?” seems to be all that anyone ever talks about on the train ride back home. A conversation that centers on price largely obliterates the conversation about the artwork itself.

There are a great many talented and under-represented artists out there, and it may seem unfair that many of them don’t get the critical and commercial attention that their talent seems to warrant. One of the most talented artists that I’ve come across far away from any cultural node is James Munce (b. 1938). Born and raised in Minnesota, Munce became a tenured professor at Kansas State University where he taught printmaking. He has gallery representation but deserves recognition that is far broader in scope. This begs the question, why aren’t art institutions doing more to support local artists?

A cure for one might call the “Art Basel” blues is to get involved with the art scene in your local town. Art studio visits make for a great opportunity to make such connections, as you get to speak with many different artists, each one of whom has an idiosyncratic way of seeing the world and making art. Every time I go to one of these events in Geneva or Lausanne, I come away with the impression that creativity in the visual arts is alive and well. Another way to get involved with the local art scene is to launch an art initiative. The Meet the Artist Lecture Series, which has hosted over 40 artists at Webster University, was created to support the local artist community.

Cross-References

- [Aesthetics](#)
- [Arts Education](#)
- [Collaborative Creativity](#)
- [Creativity](#)
- [Illusion in Perception](#)
- [Imagination](#)
- [Inspiration](#)
- [Invention](#)
- [Narratives](#)
- [Possible in Photography](#)
- [Storytelling](#)
- [Wonder](#)

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Possible of Design

Nathalie Bonnardel¹ and John Gero²

¹Aix-Marseille Univ., PSYCLE (UR 3273) & InCIAM, Aix-en-Provence, France

²University of North Carolina, Charlotte, NC, USA

Abstract

Design means conceiving of objects or processes for accomplishing goals and it is a way to intentionally changing part of the world, as it is the case in prospective ergonomics. The design process usually requires creativity since designers have to propose objects or processes that are both new/novel – and possibly unexpected – and adapted to the design situation (e.g., useful and usable by future end-users). The goals of a particular design task and the intended functions of the design to be produced are not fully available at the outset. Thus, part of designing consists in constructing those goals and functions. It occurs as designing proceeds and it has the potential to alter what has been decided before, which makes designing non-monotonic across time. The cognitive processes and mechanisms involved in the creative design activities are of particular interest and are described in this entry as well as potential ways to favor creative design.

Keywords

Design · Creativity · Prospective ergonomics · Design cognition · Inspiration · Imagination

Definition and Importance of Creative Design

According to Herbert Simon (1995), well known for his work on the design sciences, “design [...] means conceiving of objects, processes or ideas for accomplishing goals, and showing how these

objects, processes or ideas can be realized” (p. 246). In the case of routine design (see Gero and Maher 1993), the product to be designed presents high similarities to previously developed products or services and the designer can adapt a predefined design frame or design solution to perform the design. In contrast, in non-routine or *creative design situations*, which are the focus of this entry, designers have to inject creativity in their design productions. Designing is particularly challenging when the designers have to reach creative design solutions or creative designs (see for instance, Bonnardel 2006/2012a, 2012b, Bonnardel 2021; Bonnardel and Bouchard 2017), which explains the special interest for studying creativity in design. In addition, creative design is increasingly important in our society, for several reasons:

- To be competitive, companies need to propose creative products or services since more and more users are looking for products or services that offer new functionalities.
- To contribute to the imagination and elaboration of future products (or services), as it is the case in prospective ergonomics (Robert and Brangier 2012), which aims at the creation of future products that have not yet been identified and leads designers to detect existing user needs and/or imagine and anticipate future ones.
- To open up new possibilities in various contexts, such as educational contexts, where creative design activities can play an important role in the teaching and training proposed to learners to develop their creative abilities (as well as their critical reasoning and collaborative competencies, in accordance with Organization for Economic Cooperation and Development - OECD’s recommendations) – and in the training proposed to future teachers (Bonnardel and Didier 2020; Didier and Bonnardel 2020).

Characteristics of Creative Design

Designers frequently have to face demands that could be, at a first glance, considered as

contradictory in the sense that they have to conceive objects (products or services) that are new while satisfying a variety of constraints, for instance in order to develop new products that will not destabilize future users. Many views on what makes a design creative point to the need that creative designs have to be novel, original, or new and useful, or functional or valuable (e.g., Christiaans 2002), as pointed out in definitions of creativity (cross-reference in the encyclopedia; Runco and Jaeger 2012; Weisberg et al. 2021). Thus, non-routine productions in design are dependent on the designers’ creativity, that is to say their “capacity to produce an idea that can be expressed under a viewable form or to realize a production [...], which is both new and unexpected, adapted to the situation and considered as having some value” (Bonnardel 2002, p. 95).

To point out specificities of creative design, we first highlight the fact that designers have to define characteristics of a product, process, or artefact, without having a predefined procedure to reach this design goal and while being provided with a limited set of requirements and ill specified objectives. Thus, the designer’s mental representation of the design problem is initially incomplete and imprecise and, depending on the authors, design problems have been qualified as “wicked,” “ill structured,” or “ill defined” problems (Eastman 1969; Reitman 1964; Rittel and Webber 1984; Simon 1973). The goals of a particular design task and the intended functions of the design to be produced being not fully available at the outset, a part of designing consists in constructing those goals and functions (which is called “problem finding”). It occurs as designing proceeds and it allows designers to complete their mental representations, and imagine, generate, and choose design options. Further, framing or situating those goals and functions within a particular view of the world has the potential to change them and possibly to alter what has been decided before. Thus, the dynamics of design problem-solving can be described as based on an opportunistic process (Visser 1994), which is in line with Dewey’s proposal that “subsequent experiences categorize and hence give meaning to what was experienced before” (quoted in Clancey 1997,

p. 94). Therefore, decisions previously taken can be changed by subsequent decisions and the meanings of decisions in the past can be modified by what happens in the present. The evolution of the designers' mental representations is also based on the development of "external representations" or intermediate objects (Bouchard et al. 2005), going from the first sketches to the final product or creative production. These external representations constitute a form of external memory and lead the designers to modify their perception and mental representation of the design problem (Bonnardel and Bouchard 2017; Goldschmidt 1991). Thus, designers can develop a "reflective conversation" with their sketches (Schön 1983), which allows them to develop a new understanding of the design problem. Therefore, designing is a non-monotonic temporal activity and each designer constructs and deals with his or her own design problem. In addition, a given design problem can admit a large number of possible solutions, which can be considered as more or less satisfactory, according to the constraints and criteria that are considered as important in the design situation (Bonnardel 2000; Rittel and Webber 1984).

Cognitive Processes and Mechanisms Underlying Design Activities

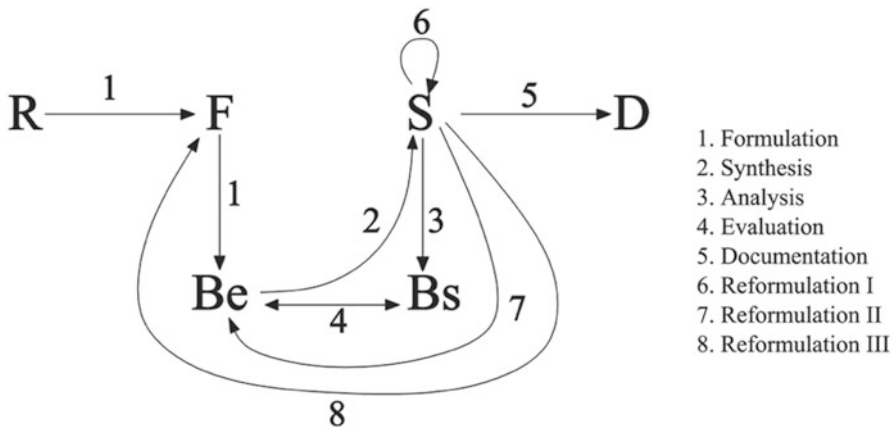
A Focus on Cognitive Processes

An ontology of designing, known as *Function-Behaviour-Structure (FBS)*, provides a framework to locate where the creativity can occur in designing (Gero 2000). It is based on three ontological categories: *Function (F)*, which corresponds to the intention of the designer, *Structure (S)*, which covers the elements and their relationships that go to make up a design, and *Behavior (B)*, which corresponds to the way the design works. As shown in Fig. 1, designers commence with *requirements (R)* from the client or future users, which express their needs and desires. During a process called *formulation* (process 1 in Fig. 1), designers transform requirements into functions and expected behaviors (*Be*), which correspond to a subset of possible behaviors for

the design product or solution. During a process called *synthesis*, designers transform the expected behaviors into structure (process 2 in Fig. 1). Then, in order to determine whether a structure satisfies the expected behaviors, designers analyze the behavior derived from structure – *Bs* (which is called *analysis*) and compare it to the expected behaviors – *Be* (which is called *evaluation*) – processes 3 and 4 on Fig. 1. If the results of that comparison are satisfactory, designers document the design in the form of an external representation – *D* (called *documentation* – process 5). When this comparison is unsatisfactory, then the structure, expected behavior, or the functions can be changed, which corresponds to a process called *reformulation* or *reframing* (reformulations I, II, III, respectively for *S*, *Be* and *F*).

The most common locus for studies on creativity is the processes allowing the generation of the product's structure (here called *synthesis*) and another common locus is the processes of reformulation or reframing.

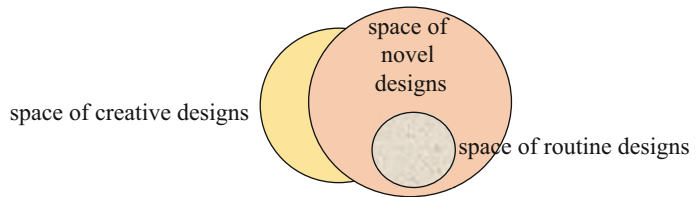
Research in cognitive psychology and ergonomics allowed the analysis of designers' creative activities (Bonnardel 2006/2012a, 2012b; Bonnardel et al. 2018) and contributed to explore the evolution of designers' mental representations (e.g., during the formulation and reformulation of the design problem) in relationships with the generation and evaluation of creative ideas and solutions (during synthesis and evaluation), since these different processes are intertwined. For instance, the *A-CM – Analogy-making and Constraints Management* – model (Bonnardel 2000, 2006/2012a) highlights the role of two cognitive processes that can allow the designers to extend their space of ideas and to orient their decisions: analogy-making (which is described in the following section) and the management of various kinds of constraints. Taking into consideration constraints related to the design problem can contribute to both divergent thinking (e.g., when constraints lead the designers to look for ideas in a conceptual domain that is far from the design current area) and convergent thinking (e.g., when constraints are taken into account by the designers for assessing their ideas or solutions and progressively restricting the research space



Possible of Design, Fig. 1 The Function-Behavior-Structure (FBS) ontology of designing showing design processes (Gero 1990; Gero and Kannengiesser 2004)

Possible of Design,

Fig. 2 Spaces of creative, novel and routine designs (Gero 1990)

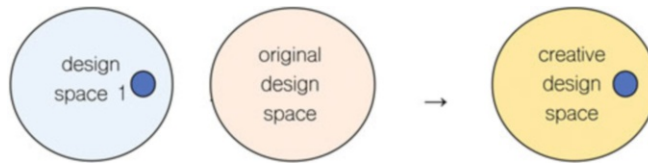


of design solutions until reaching a design that is both new and adapted to the situation). Constraints taken into account by designers can be *external*, for instance, when they reflect client's or future users' requirements (as described in the FBS ontology) and are provided in the design brief (*prescribed constraints*) or when they are induced by the human and technical environment (see Bonnardel and Lubart 2019). Other kinds of constraints can be considered as *internal* to the designers, when they are taken into account, consciously or not, during the creative activity and are specific to each designer (Bonnardel 2000, 2012a, b). These internal constraints can be dependent on each designer's experience, preferences, or personal background (*constructed constraints*) or they can result of an analysis of the current design situation (*deduced constraints*; see Bonnardel, *ibid.*). Constraints that are taken into account and managed by the designers can thus be related to the function, the structure, or the expected behavior of the design (Suwa et al. 2000).

Spaces of Possible Designs: Mechanisms of Change

To describe mechanisms allowing designers to reach creative designs, we propose to conceptualize designing as a space of possible designs resulting from the decisions the designer makes as he/she finds and frames the design problem. Within this design space, "routine" designs can be produced, which result of activities requiring little (or no) creativity. The remaining space can be occupied by "novel" designs, novel in the sense that they would be unlikely to be produced (Gero 1990). In addition to being novel, "creative" designs can be also unexpected or surprising when they sit outside the design space as originally conceived by the designer (see Fig. 2).

Several mechanisms can lead to changes in the space of designs and, thus, contribute to how a designer can produce creative designs. These mechanisms include analogy-making (as pointed out in the A-CM model), bisociation, concept removal, first principles, and creative destruction.



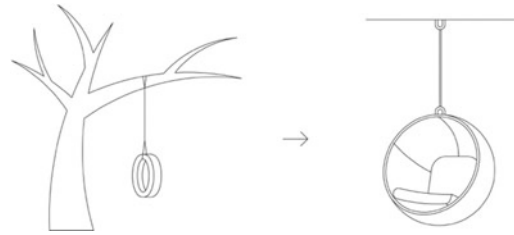
Possible of Design, Fig. 3a Changing the design space by substituting a concept from the original space with a concept from another space (analogy)

Analogy-Making Analogy is the process of transferring a concept from one design space into another design space and then substituting for a concept in the second design space. As a consequence, it changes the design space (Fig. 3a). An example of analogy would be when designing a lounge chair, finding that an overhead support served the same function as the legs of the chair, as it is the case in an artisanal swing, and substituting an overhead support for the legs in the new lounge chair (Fig. 3b).

Bisociation Bisociation refers to cases where concepts from two design spaces are joined together (Fig. 4a). An example of bisociation would be to take a chair and add the curved base of a baby's rocker cradle to produce a rocking chair (Fig. 4b). Another example would be to take a chair and add sensors that sense pressure points and uses the data they collect to change the shape of the chair to redistribute that pressure.

Concept Removal Instead of adding concepts to a design space, it is possible to remove a concept from the design space, changing it (Fig. 5a). An example of concept removal would be to take a chair and remove its legs producing a chair where the seat sat on the floor like an ottoman (Fig. 5b).

First Principles First principles designing involves commencing from an analysis of principles underlying the behaviors expected of the design (contrary to commencing with an existing design) (Fig. 6a). An example of designing a chair from first principles would be to look at the purpose of a chair as relieving the muscular activity of the back and legs supporting the torso when in a single position for a length of time. The spine is in its natural supporting position when it is vertical. When you bend your legs so your thighs are

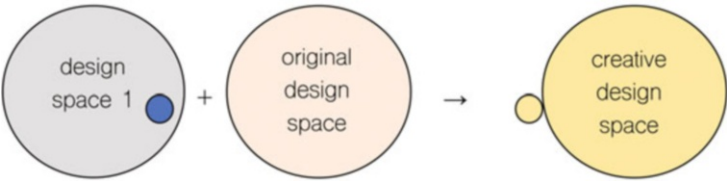


Possible of Design, Fig. 3b Example based on analogy

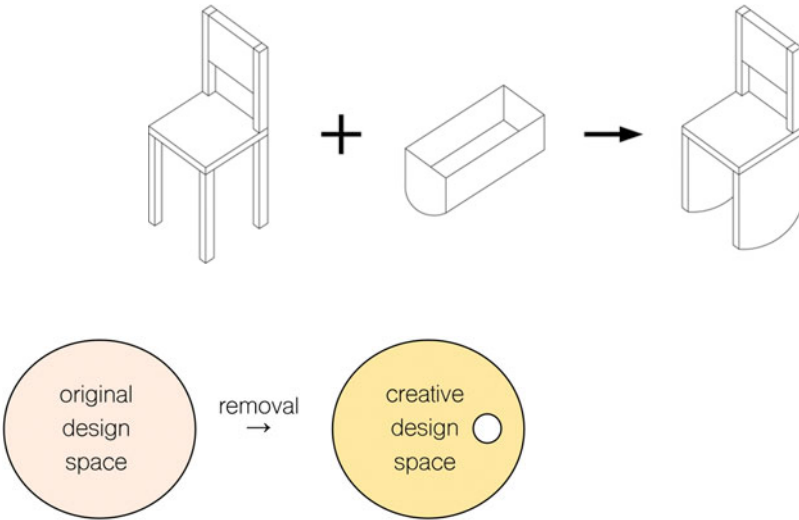
horizontal, it bends your spine and requires additional muscle support. However, you can place your thighs at around 30 degrees to the horizontal and still keep your spine vertical. When you sit on a support in this position you slide forward, so you need support at your knees to stop this. Using this reasoning from first principles you create a new kind of chair (Fig. 6b).

Creative Destruction Joseph Schumpeter (1942) introduced the idea of creative destruction as the process by which one set of concepts completely displaces another set, rendering the initial set obsolete (Fig. 7a). When applied to creative design, this displacement changes the values used to produce and assess designs. As an example of creative destruction, we can look at landline phones up to 2006. The introduction of Apple's iPhone in 2007 shifted the values used to assess a phone to now include Internet interactivity, the function to play music, and the possibility to extend the capabilities of the phone through apps. None of these features existed previously in landline phones. Further price no longer was the primary determinant as phones can cost considerably more than computers. Today's smart phones are all marginal improvements on this first "creative destruction" 2007 iPhone (Fig. 7b) and landline phones have almost disappeared.

Possible of Design, Fig. 4a Creative design space produced by bisociation that adds concepts

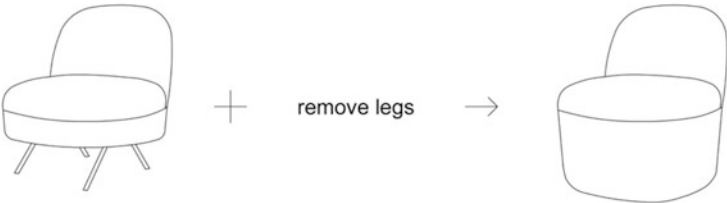


Possible of Design, Fig. 4b Example based on bisociation



Possible of Design, Fig. 5a Changing a design space by removing concepts

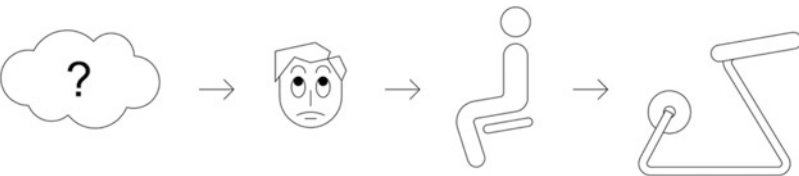
Possible of Design, Fig. 5b Example based on concept removal



Possible of Design, Fig. 6a Design by first principles does not build on an existing design space

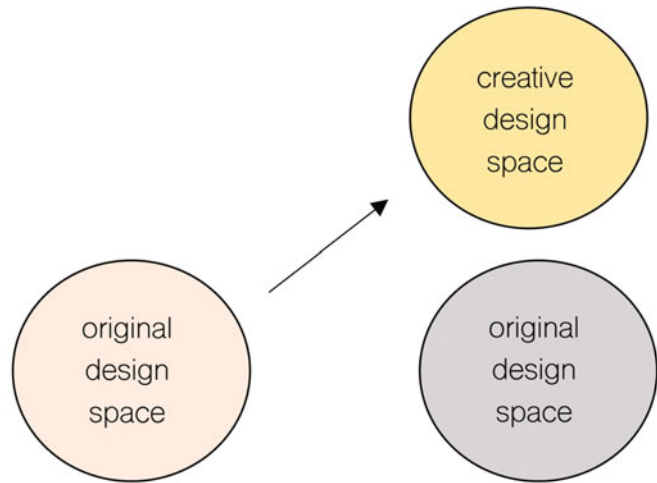


Possible of Design, Fig. 6b Example based on first principles



Possible of Design,

Fig. 7a Creative destruction where the new design space does not overlap with the original design space



Possible of Design, Fig. 7b Landline phone and the iPhone that displaced it

have been developed and it is even possible to lead designers to self-regulate their production of ideas through neurocognitive feed-back.

Classical Brainstorming Technique The seminal technique of brainstorming, created by Osborn (1963), aimed to help participants to generate and share ideas in groups to favor a “cross-fertilization” as well as to counteract their tendency to terminate the solution-generating process too early, through a two-step procedure distinguishing, on the one hand, the generation of ideas and, on the second hand, their assessment and selection.

Perspectives: Techniques and Tools to Expand the Creative Design Space

To complement our view of the possible of design, a focus of current research is on techniques and tools that can favor creativity. The general objective is to help designers to produce ideas and design solutions that are novel, unexpected, or surprising as well as adapted to the design situation. Such an objective can be reached through techniques and tools that can stimulate human’s reflection, for example, based on different kinds of brainstorming and/or human-computer interactions.

The Possible of Brainstorming Techniques

The most common technique to stimulate human’s reflection and evocation of ideas is classical “brainstorming”. Different variations of brainstorming

Variants of Brainstorming during Creative Design Variants of the brainstorming technique have been proposed and used in the design context. Thus, Jiménez-Narvæz and Gardoni (2014) reported several variants used as creative techniques in the early design process, such as *brainwriting* (when ideas are written down), *brainsketching* (when ideas are drawn), or *reverse brainstorming* (to analyze the causes of the problem). In addition, other variants were developed to favor brainstorming both in individual and collective situations as well as to lead designers to *focus not only on ideas but also on constraints related to the design problem* (Bonnardel and Didier 2016). Such variants of brainstorming were used and tested with different kinds of participants consisting in future designers and in future teachers specialized in creative activities (Bonnardel and Didier 2020). Based on these

studies, it appears desirable *to fit the brainstorming technique* to the participants' background and possibly to their personality traits (e.g., to favor divergent or convergent thinking depending on the participants' spontaneous tendency) as well to the design problem complexity.

Self-Regulation during Brainstorming Humans have the capacity to self-regulate, which is the process by which humans incorporate behavior change into their activities (Fig. 8). Although the mechanism of self-regulation is little known, it is possible to induce self-regulation in designers to improve their capacity to produce new ideas during brainstorming through neurocognitive feedback (Shealy et al. 2020). Typically, during brainstorming, the number of ideas reduces with time. Using a noninvasive method to measure a designer's brain activations while brainstorming, it is possible to present these brain activations in real time to the designers, along with instructions to maintain the level of activation that is shown to them graphically. Through self-regulation, the designer can maintain that level of activation and, in doing so, produces an increase in the number of ideas for a fixed time during brainstorming.

The Possible of Human-Computer Interactions in Creative Design

Tools can be categorized along a spectrum going from passive, through responsive, to active. Passive tools remain unchanged by their use (e.g., a spreadsheet). In contrast, responsive tools change along their use, and do

so by learning, in order to tailor their response to the user over time. Active tools interact with the designer since they respond to what the designer is doing, make proposals, and produce an iterative interaction. In a limited sense, we can consider that active tools potentially become "co-creators". Here are examples of such tools in the design context.

Expanding the Creative Design Space Through Human-Computer Interactions

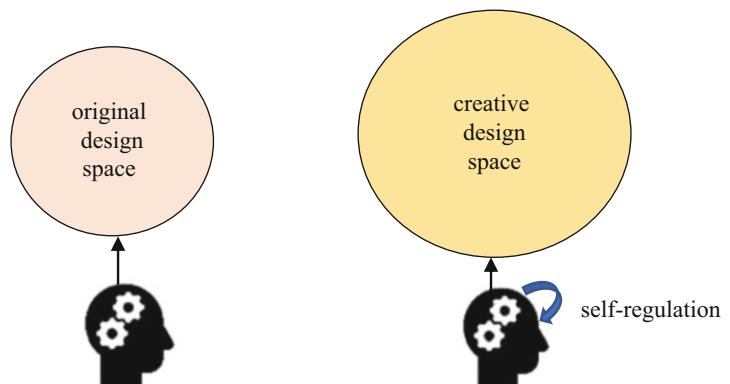
Different kinds of systems can help designers in performing processes involved in the design activity, such as the TRENDS and SKIPPI systems, deep learning processes, critiquing systems (such as VDDE), and virtual dynamic personas.

For instance, the TRENDS system (Bouchard et al. 2008; Bonnardel and Zenasni 2010) allows designers to access to images showing preexisting objects in relationships with keywords that designers associate with the object to be designed (Fig. 9a). The images provided to designers are useful for mechanisms favoring the generation of new ideas, such as analogy-making, although the benefits of using such a system seem dependent on the users' level of expertise (Bonnardel and Bouchard 2011).

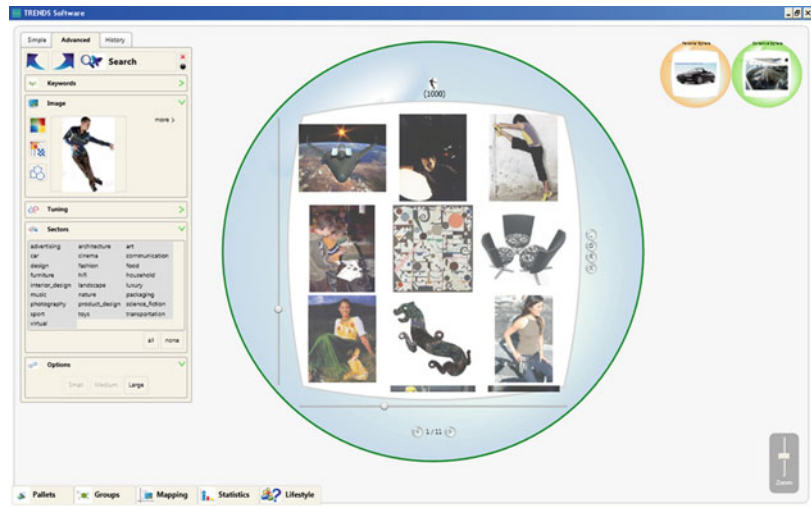
Another example of computational system helping designers to extend their research space of ideas is given by the SKIPPI system (Bonnardel and Bouchard 2017; Bonnardel and Zenasni 2010). This system allows designers to exploit relationships among words expressing, for instance, emotions and the value associated to the mark of the objects (Fig. 9b).

Possible of Design,

Fig. 8 The effect of self-regulation can be to expand the space of possible designs



**Possible of Design,
Fig. 9a** The TRENDS
system (source: www.trendsproject.org)



**Possible of Design,
Fig. 9b** The SKIPPI
system (source: www.skippiproject.com)

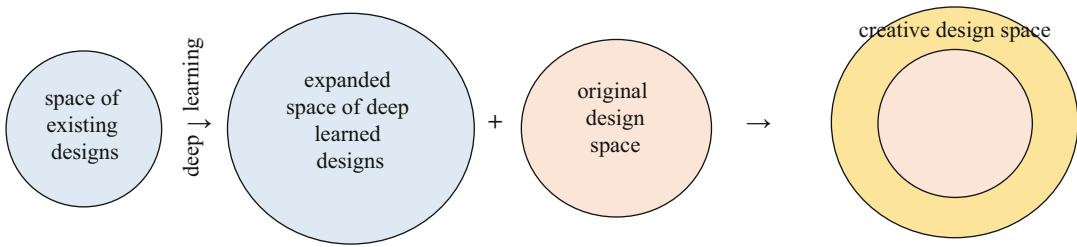


Such systems can *enrich the designers' research space of ideas* and, therefore, help them *to expand the creative design space*.

A complementary and promising way to expand the creative design space consists in using a *deep learning* process (a machine learning process in artificial intelligence), which makes use of neural networks (a computational technique modelled on human brain networks). What makes deep learning interesting is that it works with very large, unstructured, or partially structured data sets and generates structure from the data. In producing new structures for the data, it creates a space much larger than the space used to describe the original data set (Karimi et al. 2019; Quanz et al. 2019; Zhao et al. 2019). This increase in the space is what makes it

interesting in creative design, although its use in creative design is still nascent (Fig. 10).

An example of *responsive system* supporting designers' activities is provided by the critiquing system called VDDE – Voice Dialog Design Environment (Bonnardel and Zenasni 2010), which helps designers *to assess their own design solutions*. Toward this end, the system performs analyses in real-time, all along the design process, of external representations used by the designers to represent on the computational system the evolution of his/her design solution. Each time that a drawback is identified, the designer is provided with a critiquing message that points out the solution's weaknesses with regard to predefined constraints related to the design problem or by comparison with preexisting objects (when the new object to be designed has also to be in line



Possible of Design, Fig. 10 Deep learning expands the space used to structure a space of existing designs beyond the existing designs themselves

with preexisting ones to not destabilize users). In reaction to these messages, the designers can modify their design solution or explicitly decide not to modify it. In this last case, the designer introduces in the system new arguments, which makes the system evolve by extending its database.

Another new method based on interactions in a virtual space is called “*dynamic personas*” (Bonnardel et al. 2016; Bonnardel and Pichot 2020) and it allows designers to dynamically take into account users’ characteristics, expectations, and viewpoints. This user-centered design method allows, for instance, designers and ergonomists (represented by avatars) both to collaborate at distance on the same design problem and to interact in real time with an avatar that represents an archetypal future user. This method is derived of the classical “*personas*” method, which uses field data (gathered via interviews, observations and/or questionnaires) to construct “*personas*” corresponding to archetypes of users. In this classical (or “static”) method, personas are generally associated with concrete representations including both textual descriptions and photos. In contrast, in the “*dynamic personas*” method, information elements related to the user are provided dynamically to the designers and, possibly, other stakeholders. Studies on the impact of this last method on professional designers and students tend to show that it favors creativity, empathy, and collaboration, and, therefore, can promote designers’ creative and collaborative activities.

Conclusions

Apart from better understanding mechanisms that underlie creative design activities, the

major streams of thought in the early twenty-first century are related to developments offering complementary perspectives for favoring creativity in design (e.g., new techniques or interactive systems). Moreover, these techniques and systems should be adapted to designers’ characteristics, such as their level of expertise in a domain and their creative “profile,” including their background, personality traits, and their spontaneous thinking processes all along the creative design process (e.g., divergent vs convergent processes).

Some of these developments can be the result of advancements in artificial intelligence and neuroscience. Indeed, the increasing digitalization of activities has the potential to produce AIs (Artificial Intelligences) that go beyond just being responsive to human activity to moving towards becoming partners to humans while co-creating (Gero 2020; Lubart 2005). Deep learning when applied to languages has demonstrated that it is possible for an AI to carry out an interactive conversation with a human on topics that require significant knowledge (Radford et al. 2019), which is promising for developing dynamic personas based on autonomous conversational agents (Bonnardel and Pichot 2020). Deep learning has also the potential to change the relationship between databases of designs and their representations and, thus, provide access to hidden design patterns, which can then be used by an AI as co-creator companions to evoke human creativity (Karimi et al. 2020).

As more is learned about the brain and its relation to cognition and, in particular, to design cognition (Chrysikou and Gero 2020), this knowledge can be utilized to change the relationship of the brain and human activity. This change could be to

move from an unconscious relationship to a conscious one, where human behavior is directly affected by noninvasive interaction with the brain, as described above in the case of neurocognitive feedback (Shealy et al. 2020). Noninvasive brain stimulation interventions, such as transcranial direct current stimulation (tDCS) and transcranial alternating current stimulation (tACS), have been demonstrated to improve creativity (Chrysikou et al. 2017; Mayseless and Shamay-Tsoory 2015). This approach has not yet been applied to designers to determine whether it improves their creativity.

Therefore, possibility of design are various and associated to promising perspectives for better understanding and favoring creativity in design.

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Possible Worlds

Michael De

Department of Philosophy, Utrecht University,
Utrecht, The Netherlands

Abstract

Possible worlds have become important in analyses of modal or intensional notions such as necessity and possibility. In this entry we will

look at (i) the importance of possible worlds analyses, (ii) two ontological accounts of possible worlds, and (iii) two important applications of possible worlds to conditionals and truth in fiction.

Keywords

Possible worlds · Ersatzism · Modal realism · Counterfactual · Truth in fiction

Introduction

There are many kinds of possibilities. For instance, when I say that it's possible that I left my keys in my jacket pocket, I mean something like the following: it's compatible with my evidence that my keys are in my jacket pocket. I am expressing an *epistemic* possibility. However, when I say that I could have had a different name, I am not expressing anything about my epistemic state: I know what my name is because my evidence rules out the possibility of my having a different name. What I am expressing might be called a *metaphysical* possibility. Even though these senses of possibility are quite different, they can be given a unified semantic analysis in terms of *possible worlds*. To say that it is possible that ϕ is to say that ϕ is true in some possible world. For instance, to say that it's possible that I left my keys in my jacket pocket is to say that it's true in some world – i.e., *that is compatible with my evidence* – that my keys are in my jacket pocket. And to say that I could have had a different name is to say that it's true in some world *simpliciter* that I have a different name. Indeed, as we will discuss in more detail later, a great many senses of possibility can be given a semantic analysis in terms of possible worlds. This is one of the main reasons that the topic of possible world has garnered considerable interest since the mid-twentieth century.

The main application of possible worlds is to the (often semantic) analysis of *modals*. To keep matters simple, let us focus on propositional operators, i.e., operators that apply to a proposition to yield a proposition. A modal operator is an expression that qualifies the truth-value of a

proposition. For instance, it is not just true that two and two is four, it is *necessary*. The expression “it is necessary that” expresses that a proposition is not just true as a matter of fact, but that it couldn't be false, i.e., that it is true in all worlds (of a given class). This is an important feature that only some propositions have, and most propositions of interest in philosophy, mathematics, and science are precisely of this kind.

Modals are typically *intensional*. An operator is intensional just in case the truth-value of a proposition with the modal as its main connective cannot in general be determined by the truth-value of its arguments. The conjunction we learn about in introductory logic class is truth-functional since the truth value of a logical conjunction is a function of the value of its conjuncts. However, consider “Cats have fewer toes on their hind paws” and “Two and two are four.” They have the same truth-value, and yet appending “Necessarily” to each yields propositions differing in truth-value. Thus, “necessarily” is intensional. The same goes for “*S* knows/believes/desires that,” “It ought to be the case that,” “It is provable that,” “It is obvious that,” “It was the case,” and so on. A natural question now arises: if the truth-value of a modal proposition cannot in general be determined by the truth-value of its parts, how can we determine the truth-value of a modal proposition? This is one, if not *the*, main application of possible worlds, i.e., to the semantic analysis of intensional expressions.

The remainder of this entry will provide an overview of possible worlds semantics (§[Unified semantic analysis](#)), some general features of possible worlds (§[General features of possible worlds](#)), two main accounts of possible worlds (§[Two accounts of possible worlds](#)), and two important applications in philosophy of possible worlds semantics (§[Two applications of possible worlds](#)).

Unified Semantic Analysis

As we noted earlier, many modals can be given a unified semantic analysis in terms of restricted quantification over possible worlds. A typical

semantic analysis of, respectively, a “universal modality” $\Box$ and an “existential modality” $\Diamond$, runs as follows:

- ($\Box$) $\Box\phi$ is true at a world w iff ϕ is true at *all* worlds u possible relative to w ;
 ($\Diamond$) $\Diamond\phi$ is true at a world w iff ϕ is true at *some* world u possible relative to w .

It is important to note here that possibility is (or at least may be) a *relative* matter: what is possible relative to one world need not be possible relative to another. The case in which every world is possible relative to every other is a limiting case. For instance, under an epistemic reading of the modal, what is possible relative to a world w will depend on what possibilities are ruled out by one’s evidence at w , and different possibilities are ruled out by different bodies of evidence.

If we compare the statement that ϕ is possible with the statement that ϕ is true in some world possible relative to our own, the latter seems less intuitive and more difficult to understand. One may then wonder how possible worlds are supposed to furnish an *analysis* of modality. Much of the success of possible worlds can be attributed to what might be called extensional “reduction.” Prior to possible worlds analyses, figuring out the inferential role, i.e., the logic, of modals was mostly left to intuition. We know that truth entails possibility, but does the possibility of the possibility of ϕ entail the possibility of ϕ ? Until we have some way of analyzing possibility using traditional extensional tools, it is difficult to answer questions like this. However, given ($\Diamond$), we can now say that the possibility of the possibility of ϕ is true at a world w just in case for some world u possible relative to w , there is a world v possible relative to u at which ϕ is true. Thus, the possibility of the possibility of ϕ entails the possibility of ϕ just in case relative possibility is transitive. The question then comes down to whether relative possibility is transitive, and in some cases this is a much easier question to answer than the one we started with concerning the entailment involving iterated possibilities. For metaphysical modality, for instance, every world should be possible relative to every other, in which case relative possibility is indeed transitive.

So one of the main virtue of possible worlds semantics is that it gives us an extensional way of (semantically) analyzing intensional notions. Important questions, then, concern the philosophical foundations of possible worlds analyses. What are possible worlds? How do we have epistemic access to them? Does a relative notion of possibility make sense? Should possibility be taken as irreducibly intensional? These are some important questions that possible worlds semantics raises. In the next section, we will characterize possible worlds in a very general way. We will then go on to consider two main accounts of possible worlds, as well as two applications of possible worlds to the analyses of conditionals and truth in fiction.

General Features of Possible Worlds

Our world is home to everything.¹ Other possible worlds are supposed to be like this as well, at least in how they represent things to be. This maximality of worlds entails:

Completeness For every proposition ϕ and world w , either ϕ is true at w or else false at w .²

In other words, possible worlds decide the truth-value of every proposition, and this allows us to say whether a proposition is necessary or not.

Though most assume that possible worlds are complete, most possibilities intuitively conceived are not. For instance, the possibility that I roll a one on my next die toss does not settle the truth-value of every proposition. There are numerous ways in which I could realize rolling a one, so features extrinsic to the roll are not settled. Mundane talk of possibilities in this sense is non-maximal. They are more like *situations* in

¹If there are abstract objects, such as numbers and propositions, then perhaps they are not *part* of our world in the usual sense. Nonetheless, every concrete object is part of our world.

²I am ignoring systematic failures of completeness, such as might be caused by vagueness, non-denoting terms, etc.

situation semantics: that is, they are ways *parts* of worlds might be.³ Nonetheless, an incomplete possibility can be viewed as, not a single world, but a class of worlds, viz., the worlds at which the possibility obtains. Then say that a proposition is true at the class iff it is true at each member and otherwise it fails to have a truth value. Classes of worlds may then be viewed as situations. However, as most of the philosophical literature identifies possibilities with worlds, we will not consider incomplete possibilities any further.

Possible worlds are so called because they are *possible*. Thus, one other important feature they have is that they are *metaphysically* (and not just logically) consistent:

Consistency For every proposition ϕ and every world w , if ψ and ϕ are metaphysically inconsistent, then ϕ and ψ are never both true at w (at the same time).

Using metaphysical consistency to characterize worlds introduces two problems. First, what counts as metaphysically consistent is debatable. Some, for instance, think that one could not have had different origins, e.g., parents, a thesis known as *origin essentialism*. What counts as logically consistent is of course also debatable, but much less so. Moreover, the notion of logical consistency is amodal, and it is not clear whether metaphysical necessity can be given a similarly amodal analysis, in which case no *reductive* analysis can *characterize* a world in terms of Consistency, even if every world must satisfy it.

What other general features possible worlds have is more or less up for grabs. Some hold, for instance, that something must exist at every possible world.⁴ Others think that exactly the same things exist at every world.⁵ Some of these debates boil down to what worlds are, ontologically speaking, a topic to which we now turn.

Two Accounts of Possible Worlds

What is a possible world? Given the role that possible worlds play, it should be no surprise that there are many accounts that posit entities well suited to play that role, with each having their own advantages and disadvantages. In this section we will consider two accounts, one being fairly ontologically innocent and the other fairly controversial.

Linguistic Ersatzism

We noted that possible worlds are both complete and consistent. One obvious candidate to play the role of a world, then, is a complete and consistent set of sentences. Such sets provide for a straightforward notion of representation, according to which a possible world represents that it is the case that, or makes true that, ϕ just in case ϕ is a member of the world. In other words, a world implicitly represents that something is the case iff it explicitly does.⁶ Ersatz worlds are real and exist, but they are abstract. What more could we want?

For one, it looks like it will have to take as primitive or brute that some sentences are jointly metaphysically inconsistent, and by doing so a potentially important motivation for employing worlds is undermined, viz., to provide a *reductive* analysis of possibility. Most ersatzists are not much bothered by this, however, since it is not part of the ersatzist program as most conceive it to provide *reductive* analyses. This is a primary aim of modal realism, a competitor view which we'll come to shortly. What possible worlds provide, according to the ersatzist, is a means of furnishing a unified semantic analysis of modals, which may

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³ See (Barwise and Perry 1983).

⁴ See e.g. (Lewis 1986).

⁵ See, e.g., (Linsky and Zalta 1994).

⁶ A world could be complete in another sense that would complicate the notion of representation. It could contain enough sentences to *imply* for any sentence that either it is true at the world or else false there, so that sentences not explicit members of the world would be *implicitly* represented as being true or false there. For instance, a world might be a collection of sentences including (i) which fundamental particles exist, where they are located, and what properties they have, and (ii) postulates stipulating how to get the macro-truths from the micro-truths.

be best accomplished via quantification over worlds (versus primitive modal operators).

Another problem for ersatzism concerns the “worldmaking” language, i.e., the vocabulary from which the sentences that make up worlds is formed. Obviously, it cannot be ambiguous and each sentence must be able to receive a determinate truth-value. So the language cannot be a natural language like English, though it could be some cleaned-up and idealized natural language, whatever that may be. It must also include a name for each individual and each space-time region since there are possibilities concerning each such individual and region. Since there are uncountably many such regions, the language will be larger than your typical language, but that in itself need not present an obstacle.

Now supposing the ersatzist has found a suitable worldmaking language, there is still a problem about having predicates for alien properties, if there be. An alien property is any property that is not definable by even infinitary means from the properties instantiated at our world. They are completely foreign to our world. If there are alien properties, and it seems intuitively compelling that there could be, the ersatzist won’t have the linguistic resources to express modal truths concerning them. The ersatzist analysis will then fall short of being able to account for all possibilities.

One possible way out is to argue that such properties can be *described* in our language via their nomological roles. For instance, we can say that there is a property having such and such features that is distinct from any property actually instantiated and is not definable from any property actually instantiated. It would be good enough to say that there is an alien property playing such and such a role. However, we now run into a problem. If properties do not have their nomological roles essentially, i.e., if *quidditism* is true and two properties could swap their nomological roles, then this strategy of describing alien properties will conflate distinct possibilities. It will not be able to say that there are two worlds w and u instantiating properties playing the same roles, except that two properties having certain roles in w have swapped those roles in u . Whether this is a

genuine challenge depends on whether quidditism is true and whether the ersatzist can account for quiddistic possibilities.⁷

Linguistic ersatzism is an attractive account of possible worlds for several reasons. First, sets of sentences are ontologically acceptable entities by most non-nominalists. Second, representation can be given a straightforward analysis in terms of set-theoretic membership. Third, it makes nearly no additional assumptions about worlds besides consistency and completeness. However, it also has several drawbacks. First, it arguably fails to provide a reductive account of modality, and second, it is unclear whether it can account for all possibilities. We will see that there is room for improvement on these two fronts, but not without cost.

Modal Realism

David Lewis is the founding father of *modal realism*, the view that there are other possible worlds that are, ontologically speaking, much like our own.⁸ Other worlds are unified spacetimes occupied by concrete objects. Specifically, Lewis takes a world to be a maximal mereological sum of spatiotemporally related objects, maximal in the sense that if anything is spatiotemporally related to part of a world, then it too is part of the world. This entails that nothing in distinct worlds is spatiotemporally, and hence causally, related, and therefore that worlds never share a common part. This means that nothing literally exists in more than one world, even though a world can *represent* concerning an individual that it exist there and have certain properties. How a world does this by means of similarity: a world w represents concerning an actual object o that it has property F just in case there exists something o' at w that (i) sufficiently resembles o and (ii) has property F . If such an o' exists it is called a *counterpart* of o .

This makes intuitive sense. When I want to skip a stone over the pond, I choose stones on the basis of their similarity to previous stones that

⁷See (Lewis 1986, §3.2) for a discussion of this challenge to the ersatzist, and (Sider 2002) for a solution.

⁸See (Lewis 1986).

skipped well. I know that if one stone sufficiently resembles another that skipped well (i.e., it has a flat bottom, etc.), it too should skip well (ignoring any failure of my own to properly throw). So we can and do gain knowledge of capacities and possibilities by means of similarity. That is at least how some modal *knowledge* is grounded. It is of course another thing to say that that is how modal *truth* is grounded, as the modal realist holds.

It may seem incredible to believe in genuine possible worlds and, moreover, to believe that there are enough to furnish an adequate theory of modality. After all, it does not follow from the mere existence of other possible worlds that there are enough of them, i.e., at least one for each maximal possibility. Nor does it follow that even if there were enough of them, that modal truth is grounded in them. The first problem Lewis solves by maintaining a thesis called the *principle of plenitude*, which holds that for any way a world could be, some world is. This principle can be given bite when understood as a *principle of recombination*, which states roughly that anything can coexist with anything else, or that any parts of worlds can be “patched” together. Lewis claims that this gives us enough possible worlds to account for all possibilities.⁹ It is not clear how Lewis answers the second problem, but if he is right that possible worlds are indispensable to our best analyses of certain modal notions including out best analysis of modality, then it is a small abductive step to the conclusion that modal truth is grounded in possible worlds.

Two Applications of Possible Worlds

Conditionals

A conditional is, roughly, an “if... then” statement. In English there are at least two types of conditionals, the indicative, e.g., “If Oswald didn’t shoot Kennedy, someone else did” and the subjunctive or counterfactual, e.g., “If Oswald

hadn’t shot Kennedy, someone else *would have*.” Clearly the examples differ: the indicative is true and the counterfactual false. If Oswald hadn’t shot Kennedy, we’ve no reason to think anyone else would have.

Clearly the two-valued material conditional we learn in logic class cannot capture the counterfactual since any material conditional with a false antecedent is true. Moreover, we know that the counterfactual is intensional. A now popular analysis, due to Lewis and Robert Stalnaker, employs possible worlds.¹⁰ The simplest version of the analysis runs as follows:

- “If ϕ were the case, ψ would be the case” is true at world w relative to context c iff in all the worlds u most similar to w as determined by context c , if ϕ is true at u , ψ is true at u .

This analysis does a fairly good job at capturing the natural language counterfactual, but it’s not perfect. For instance, it makes vacuously true any antecedent with an impossible antecedent. For instance, “If two and two were five, two and two would be four” comes out true on the analysis, which many have found counterintuitive.

The notion of comparative similarity between worlds (i.e., w is more similar to u than v is) employed in the semantics is ingenious, and does a compelling job of capturing the context-sensitivity of the counterfactual as well as notions that are amenable to a counterfactual analysis. As we will see, something like it is also employed in Lewis’s account of truth in fiction. The notion of a “most similar” or “nearby” possible world is often invoked in discussions on the analysis of knowledge. For instance, Duncan Pritchard endorses the following version of the so-called safety principle:

Safety If S knows a contingent proposition ϕ , then, in nearly all nearby possible worlds in which S forms the belief that ϕ in the same way as in the actual world, ϕ is true.¹¹

⁹He moreover gives a sort of indispensability argument for believing in other worlds in the first place.

¹⁰See (Lewis 1973b) and (Stalnaker 1968).

¹¹See, e.g., (Pritchard 2005).

What counts as a nearby world depends on which worlds are closer to ours than others. This has now become a common metaphor in philosophy, e.g., when discussing whether a counterfactual is true.

In the literature one can find counterfactual analyses abound. For instance, such analyses have been given for causation¹² and dispositions.¹³

Truth in Fiction

A work of fiction makes true some sentences and not others (assuming fictions are consistent). Moreover, we want to say that some sentences not explicitly stated in the fiction are nonetheless true in the fiction. For instance, we want to say it's true that Holmes lived in the northern hemisphere because that is entailed by his living in London. Indeed, when we think about what is true in a fiction, we tend to hold certain background facts fixed. We assume that it is true in the Holmes stories that London is in the northern hemisphere, even though nowhere in the fiction is that made explicit.

There are several analyses of truth in fiction, but Lewis' fits the current theme since it employs a notion of comparative similarity among worlds. According to Lewis, a sentence such as "Holmes lives on Baker Street" should be read as having an implicit fiction operator prefixed to it: "In the fiction f , Holmes lives on Baker Street." The question now arises as to how we should analyze the operator "In the fiction f ." Lewis proposes two analyses, the simplest of which is the following:

- A sentence of the form "In the fiction f , ϕ " is non-vacuously true iff some world where f is told as known fact and ϕ is true differs less from our world, on balance, than does any world where f is told as known fact but ϕ is not true.¹⁴

This analysis can be read counterfactually: "In the fiction f , ϕ " is non-vacuously true iff were f told as known fact, ϕ would be true. Given that a world in which London is in the northern hemisphere is more similar to our world than one in which it isn't, this analysis gives us that is true in the Holmes stories that Holmes lives in the northern hemisphere. Indeed, it may hold too many of the background facts fixed that may conflict with what is intuitively true in the fiction. This is why Lewis considers a related analysis where the background depends on the doxastic states of the agents of the world in which the fiction is told as known fact.¹⁵

Here again we see the fruitfulness of possible worlds, and specifically the notion of comparative similarity among them, to a compelling analysis of a fairly elusive notion like truth in fiction.

Summary

We have seen the importance of possible worlds analyses of a wide range of notions, including necessity, counterfactuals, and truth in fiction, but we have also seen some of the limitations and complications that such analyses raise. For instance, what exactly are possible worlds, and if they are not modally reducible, do they genuinely clarify notions to which possible worlds analyses are put? These are important questions that become increasingly important as possible worlds analyses continue to flourish.

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¹²Event e causes c iff had e not occurred, c would not have occurred (and e and c occurred). See, e.g., (Lewis 1973a).

¹³An object o is disposed to ϕ under conditions c just in case, were o in c , o would ϕ . See, e.g., (Lewis 1997).

¹⁴See (Lewis 1978).

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Post-Truth

Vlad P. Glăveanu

School of Psychology, Dublin City University,
Dublin, Ireland

Centre for the Science of Learning and
Technology, University of Bergen, Bergen,
Norway

Abstract

This entry examines the phenomenon of post-truth in its relation to the notion of the possible. It starts by outlining the roots and main characteristics of the post-truth context, including its relation to politics, social media, and post-modernist assumptions about the relativity of truth. While the spread of falsehoods and lies is not uncommon across the history of society, what makes the current trend particularly alarming is the fact that we are dealing with more than distortions of what is true; we are witnessing a growing disregard, in the case of some individuals and groups, of reality itself. To overcome the pitfalls of relativist accounts, what we need is a recognition of the fact that the possible is not the opposite of the real but its ever-present companion. And, also, that cultivating possibilities, including in the form of “possible truths,” should be guided by ethical question about what these truths “do” for self, others, and society.

Keywords

Post-truth · Misinformation · Post-modernism · Relativism · Possible · Ethics

The current debate on post-truth has a lot to tell us about the possible. On the one hand, this association might sound surprising as the two have widely different connotations: highly negative in case of post-truth, commonly associated with the rapid deterioration of democracy and the dismantling of social consensus, and generally positive about the possible, usually connected to human striving and human ways of being in the world. On the other hand, both these notions raise important questions about the nature of reality and, in particular, the relation between what exists in the mind vis-à-vis what exists in the world.

In some ways, post-truth societies opt for inhabiting possible rather than actual worlds, they prefer fiction to fact and, most importantly, position their own fictions as facts. They are, thus, effectively making some possibilities real while ignoring unwanted realities. This process is central for many possibility-enabling phenomena discussed within the present encyclopedia, from play and imagination to utopian forms of thinking. And yet, at the same time, there is a fundamental distinction between a post-truth mentality and a playful one, for instance. This difference comes from the fact that the possible and real are not opposed to each other but inter-dependent. And it is precisely this inter-dependence that is challenged by post-truth beliefs and practices. In the end, analyzing more closely the reality of post-truth invites us to reflect much more deeply on the ethics of possibility, a topic I return to toward the end.

In *The Origins of Totalitarianism*, Hannah Arendt wrote that “the ideal subject of totalitarian rule is not the convinced Nazi or the convinced Communist, but people for whom the distinction between fact and fiction (i.e., the reality of experience) and the distinction between true and false (i.e., the standards of thought) no longer exist” (Arendt 1958, p. 474). This is a chilling reflection for our times, marked by what many call post-truth politics or “the triumph of the visceral over the rational, the deceptively simple over the honestly complex” (D’Anconda 2017, p. 20). Politicians, corporations, and journalists stand accused of fomenting this alarming trend by showing little concern for objectivity in their support for

populist and nationalist policies. And yet, this is much more than a political issue – it is also an epistemological one, a question of what we consider to be truthful knowledge and of our ability to know ourselves, others, and the world we live in. Such interrogations have a long history in philosophy and, for the most part, they served the purpose of helping us reflect on the (im)possibilities associated with the human condition. But in today's social and political climate, they became weaponized by extreme groups who tend to share one or more of other beliefs such as anti-science, anti-vax, climate change denial, and white supremacy, among others.

The Era of Post-Truth

The term post-truth has an interesting history (for more details, see D'Anconda 2017). It is believed that the term was first used in a 1992 article written for the *Nation* by Steve Tesich. He decried in that article the fact that the American public, traumatized by Watergate and other scandals, not only started turning away from the truth but suppressing it. Moreover, as Tesich noted, they had decided this freely, not because of some external totalitarian pressure. The notion rose to prominence many years later, in 2016, in the context of the double shock of the “Brexit” referendum in UK and Donald Trump's election in the USA. It was that year that post-truth became Oxford Dictionaries' Word of the Year after its usage surged by 2000% (McIntyre 2018).

But what exactly is post-truth and does it mean a total disregard for the truth? More than this, is this a new phenomenon, specific for early twenty-first century or one that goes back to twentieth century propaganda and perhaps even further? When we are lamenting the fact that we live now in a post-truth world, aren't we forgetting perhaps that we have lived this way all along?

In trying to define post-truth it is best to start from the notion of truth. For centuries, at least since the times of Aristotle, deciding what is true has been a relatively straightforward affair. This was made easier by Aristotle's early definition: “To say of what is that it is not, or of what is not that it is, is

false, while to say of what is that it is, and of what is not that it is not, is true” (in Baggini 2017, p. 4). Such an understanding of truth substantiates the correspondence theory or the belief that a high degree of correspondence should be established between statements about the world and facts of the world. The more statements diverge from facts, the further we get from gaining (or stating) true knowledge. This conception has been attacked across the centuries both by philosophers who didn't believe we can “objectively” grasp reality and those who saw language as polyphonic, thus making our statement about the world impossible to be reduced to a one-to-one type of correspondence. But, even when challenging the basis of an “objective” truth, the concern for it remained. In contrast, in recent decades, “objectivity – or even the idea that people can aspire toward ascertaining the best available truth – has been falling out of favour” (Kakutani 2018, p. 17). Beyond a contestation of what counts as fact, we notice more and more a disregard for facts.

Why Post-Truth? Why Now?

The Oxford Dictionaries definition of post-truth states that it designates a climate in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief. This doesn't mean, however, that we don't care anymore about truth claims but that they start to be subordinated to political points of view (McIntyre 2018, p. 11), to how we want to see the world rather than how it is. This is not a question of misperception or the creativity of language, as post-modern thinkers would have us believe. It is a bold reversal of power in which the possible (e.g., imagined events and facts) dominates the real or, at least, what people perceive as real. The possibility that a political viewpoint is just as good and truthful as any other – more than this, that my views are better than yours, despite any need to critically reflect on evidence – has become the new normal, at least for specific groups.

For some, this is a sure sign of a global trend. This trend “is a crash in the value of truth,

comparable with the crash of a currency or a stock” (D’Anconda 2017, p. 8). For others, speaking of post-truth societies is “premature and misguided,” “we wouldn’t even be talking about post-truth if we didn’t think truth mattered. The world is neither ready, nor willing to say goodbye to truth, even in politics where it sometimes seems as though it has already taken its leave” (Baggini 2017, pp. 6–7). The “truth,” as always, is somewhere in the middle.

More specifically, we need to make some important distinctions in this area (see McIntyre 2018). First, we should distinguish between falsehoods and lies. The former are unintentional mistakes, the latter refer to deliberate ways of covering up the truth. Then we have wilful ignorance whenever we don’t know if what we say is true, but we say it anyway. In other words, we don’t bother to know if what we are saying is indeed correct, often out of laziness. This gets us closer to what the philosopher Harry Frankfurt referred to as “bullshit” (see Frankfurt 2005), which is different than lying. When lying, the person needs to have a clear understanding of what is true, in order to conceal it. When bullshitting, he or she demonstrates only a careless indifference toward knowing what is actually true. From here on there is just one more step to self-deception and delusion in which we get to convince ourselves that a falsehood is, in fact, the truth, even when all credible sources dispute this conclusion. This is much closer to what specialists discuss as post-truth: the conviction that what one thinks and especially how one feels can change a lie into something truthful.

All the phenomena above – uttering falsehoods, lying, bullshitting, deceiving ourselves – are not new and have been part of human history since its beginning. Either for cognitive reasons (related to how we perceive and process information) or social ones (related to how group membership changes our thinking), we have always dwelled, to some extent, in the realm of heightened possibility that is post-truth. But the difference today is that not only individuals do this – entire communities engage in such practices as well. Even more alarming, some politicians take part in this. As McIntyre (2018, p. 10) shrewdly

notes, and as we could see from Donald Trump’s presidency and Boris Johnson’s premiership, “when our leaders – or a plurality of our society – are in denial over basic facts, the consequences can be world shattering”.

From History to Fiction

We established, above, that today’s current social and political climate is both similar and different than other historical times. This means, among other things, that we can and should learn from the past, including past works of fiction, in order to know more about the mechanisms of post-truth politics and, perhaps, find more effective ways to counter them. In the words of D’Anconda:

Lying has been an integral part of politics since early humans arranged themselves in tribes. Anthropologists note the importance of deception in primitive societies, especially, but not exclusively, when dealing with outsiders. Plato ascribed to Socrates the notion of the ‘noble lie’—a myth that inspires social harmony and civic devotion. In Chapter XVIII of *The Prince*, Machiavelli urges the ruler to be ‘a great pretenders and dissembler’ (D’Anconda 2017, p. 23).

This reality has often been dramatized by novelists with a taste for the dystopian and for constructing (almost) perfect totalitarian worlds. As mentioned earlier, it was the grim experience of Nazi, fascist, and communist propaganda that inspired many of these authors to explore the processes underpinning post-truth politics and to dissect its main features. George Orwell stands out among novelists in this regard for offering us, with his well-known book, *1984*, a great example of how politics, power, and technology can collaborate in rendering any notion of truth useless. At first sight, there aren’t many parallels between the dystopian universe of *1984* and our world today, the former designed and controlled by the Party, down to every detail of one’s life, including mental life, the latter marked by fragmentation, mobility, and interconnectivity. And yet, some commonalities can be found. Take, for instance, the role played by technology. In his piece of fiction, technology is used to monitor and dominate individuals while, in our (real)

world, it has the power to bring people together and increase participation, including in online spaces. But, a closer look at the Internet and, in particular, social media and their impact of the spread of post-truth mindsets and ideologies quickly comes to show that technology remains “the all-important, primary, indispensable engine of post-truth” (D’Anconda 2017, p. 49). The use of algorithms to expose people to content they are likely to want and believe in, the emergence of “echo chambers,” and the general ease with which conspiracy theories spread online are as disturbing as Orwell’s view of total control.

Perhaps one of the most direct anticipation of today’s discussion of post-truth transpires in 1984 in the notion of “doublethink” or the power to hold two contradictory beliefs in one’s mind at the same time, and trust that both of them are true. It is by controlling language, especially simplifying it, that people in Orwell’s dystopia become incapable of questioning the reality imposed by the Party and are trained, from early on, into accepting whatever the Party wants to be true, even when this constantly changes. Today’s simplified use of language on social media, often reduced to abbreviations, hashtags, and the use of emojis, could be interpreted as signs of cognitive impoverishment, at least in some online spaces. And yet, the power of the Party went beyond language and was ultimately expressed in how the mind and body of dissidents were subjected to torture at the hands of interrogators. The famous scene in which Inner Party member O’Brien tells his victim, Winston Smith, that reality exists in the human mind, and nowhere else, is emblematic for the methods of those who spread misinformation online. In 1984, however, the Party was supposed to hold the ultimate truth. Today we are more likely to be persuaded that there is no such thing. The outcome is the same though: more openness to manipulation and a generalized sense of resignation.

Fiction itself, even when presumably about the future or alternative worlds, is rooted in history. In this case, it is interesting to note that George Orwell was not a passive bystander to the major world events taking place during his lifetime, most notably World War II. A participant in the

Spanish civil war, he was terrified by the ability of Fascist propaganda to shape people’s perception of the Russian intervention in the conflict. This prompted him, in his 1942 essay called *Looking Back on the Spanish War*, to reflect on the strange feeling that “the very concept of objective truth is fading out of the world” (see D’Anconda 2017, pp. 3–5). The fact that lies can pass into history and, effectively, become history, made Orwell wonder about how the story of the war will be written if Franco remains in power and even if he doesn’t (given the fact that his government kept traces of only those narratives that served its purposes). Most interestingly, his main concern was not that history is biased – this is very much a fact of living in a human society – but that few people of his time showed interest in correcting such biases. That, in the end, they lacked the belief that history could be written truthfully... The endless possibilities of (re)imagining history had no anchor in reality, they would only serve as mirrors of individual and collective intentions, hopes, and fears. Who was to be blamed for setting up those mirrors? Many people, both then and now, but one group seems to stand out, at least for how unexpected (even for its own members) their contribution is to post-truth.

Blaming Post-Modernism

It is rare to have philosophers and other academics (partially) accused of societal upheaval and yet this charge is often repeated by those who analyze post-truth. In brief, besides the political and technological dimensions of this phenomenon, there is a clear epistemological underpinning to the debate. Epistemology concerns the theory of knowledge used by scientists, philosophers, and lay people alike to make truth claims and, as such, ideas such as “there is no ultimate truth about the world” and “truth is a matter of perspective, my truth being just as good as yours” are epistemological in nature. They are typically associated with relativism which itself is associated with post-modernism and its related manifestations (e.g., social constructionism). As a current of thought that swept across the social sciences and

humanities in late twentieth century, post-modernism offered a much-needed counterpoint to positivist science with its essentialism, reification and, oftentimes, justification of social inequality. In response, post-modernist thinkers claimed that there was no single privileged position from which to understand reality and, as such, inclusive and critical dialogues between perspectives were needed in order to grasp the world as it appears to the multiple participants in society. This view, for as modern (or rather, post-modern) as it might sound, has an illustrious past in philosophy and science, versions of it being promoted, at different times, by thinkers as varied as Gorgias, Protagoras, Plato, Descartes, Hobbes, Darwin, Nietzsche, William James, Michel Foucault, and Richard Rorty, among others (Blackburn 2006). While it is hard to do justice to the diversity of these philosophical views, overall, the post-modern position promotes:

the idea that there was a right or wrong answer to what a text (whether written or behavioral) ‘meant’ was thrown into question. Indeed, the notion of truth itself was now under scrutiny, for one had to recognize that in the act of deconstruction, the critic was bringing his or her own values, history, and assumptions to the interpretation as well. This meant that there could be many answers, rather than just one, for any deconstruction. The postmodernist approach is one in which everything is questioned and little is taken at face value. There is no right answer, only narrative (McIntyre 2018, p. 125).

This way of framing post-modernism brings it close to current sociocultural theories of the possible (see Glăveanu 2020), theories that discuss this phenomenon with the help of notions like difference, multiplicity, perspectives, and dialogue. However, it is on the topic of relativism that post-modernism and sociocultural theory split, in particular when the latter is grounded in pragmatism. This is because, as critics of post-modern views argue, there is a difference between saying that knowledge depends on one’s position and perspective and that reality itself is relative to one’s position and perspective. The first standpoint acknowledges the fact that our understanding of the world depends to a large extent on who we are and where we are in this world, but it doesn’t deny

the possibility of grasping reality through the coordination of multiple perspectives. In contrast, the second standpoint makes any attempts at grasping reality futile and shatters it into a multitude of isolated and solipsistic perspectives.

What is interesting to notice when it comes to the current debate about post-truth is the paradox at the heart of relativism. When it was first proposed, in mid to late twentieth century, its aim was social, political, and emancipatory. In particular, post-modern thinkers wanted to give voice to the marginalized and oppressed and to challenge the hegemony of the powerful (e.g., white, male, rich, Western), including their hegemony on truth. It was an effort to increase pluralism within society and contribute to calls for diversity, inclusivity, and civil rights. In early twenty-first century, however, almost the same arguments about truth are being paraded, especially by (far) right politicians and commentators, in order to promote misinformation, squash resistance and, more generally, suppress voting rights and increase social inequality (McIntyre 2018). This is all done through the simple act of questioning obvious facts. If everything is a “social convention,” D’Anconda (2017, p. 92) asks, “what is to stop the purveyor of ‘fake news’ from claiming to be a digital desperado, fighting the wicked ‘hegemony’ of the mainstream media?”

It is by using the epistemological means of post-modernism that creationists, for example, argue that children should also learn in school about “intelligent design” or anti-vax supporters and climate change deniers claim that their experience and beliefs should be as important as those of scientists. “Teach both sides” or “teach the controversy” (Kakutani 2018) are calls often heard today, ignoring how deeply unequal the evidence for each side is. Controversies are created where there arguably should be none. And this displays, once more, the perverse power of post-truth propaganda to appropriate the means of post-modern thinkers and, to some extent, of those who are concerned with how the possible is envisioned and enacted in society. One great example of this is doubt, a key practice fueling the post-modern drive to deconstruct language and criticize power. But, also, an enormously potent weapon in the assault on truth we have been witnessing for many decades. In their seminar book,

Merchants of Doubt, Oreskes and Conway (2011) document how the tobacco industry fought against scientific consensus around the negative consequences of smoking for health. By setting up the Tobacco Industry Research Committee in 1954, these corporations wanted not to deny the role of science but cultivate doubt about scientific consensus. They aimed, and to a large extent succeeded, to pit a few fringe, questionable figures, against the scientific establishment and foster confusion about what might actually be the case. Even if the Committee has been disbanded following a series of lawsuits across the USA, this post-modern and, in essence, possibility-enhancing practice of doubt was extended to climate change where it continues to be relatively effective, at least for some. In the words of D’Anconda, again:

[...] the normal practice of adversarial debate is [nowadays] morphing into an unhealthy relativism, in which the epistemological chase is not only better than the catch – but all that matters. The point is simply to keep the argument going, to ensure that it never reaches a conclusion (D’Anconda 2017, p. 46).

The Ethics of Possibility

There are lessons to be learned about the possible from considering the case of post-truth, namely, the fact that unconstrained possibility often has negative consequences for individuals and society. In this context, without a set of criteria for what passes as “truth” we are left with the daunting possibility that everything could be true, a situation that renders the notion hollow. This, in turn, opens the door for extreme forms of relativism, skepticism, and apathy to take over and reduce the prospect of building common ground and engaging in collective action. On the other hand, sociocultural and pragmatist studies of the possible hold the key to sidestepping some of the most negative implications of post-modernism while harnessing its power to question hegemonic relations and structures. To achieve this, we need to engage with the possible not only as an ontological and epistemological category but an ethical one. The question of ethics is intrinsically related to debates about post-truth, for example, in the double standards adopted by people who “routinely embrace an obscenely high standard of doubt toward facts that they don’t want to believe,

alongside complete credulity toward any facts that fit with their agenda” (McIntyre 2018, p. 11). But, at a deeper level, this question is about the consequences of spreading misinformation for other people and society as a whole. In the end, our capacity to create new possibilities and go against “what is” doesn’t mean that we should do so without considering what our explorations of the possible mean for others.

Summary

When it comes to the notion of truth, we need to collectively find a way to “defend the plurivocality, ambiguity and non-programmability of truth while also defending the right to say that some things are not just different, they’re wrong, and this without embracing the no less mistaken idea of absolutism” (Caputo 2016, p. 9). And the first step toward reinstating truth is to understand its complexity and the fact that no easy definition would do. As Baggini (2017, pp. 8–9) notes, “truths can be and often are difficult to understand, discover, explain, verify” but “they are also disturbingly easy to hide, distort, abuse or twist.” Our responsibility, as scholars of possibility, is to examine the implications of any “possible” truth in the world and what it affords human action and interaction. It is not only the case, in this regard, that basing one’s beliefs and choices on misinformation or falsehoods ends in failure. What matters most is what any given position and perspective helps us do or achieve, in a pragmatic sense. “Truths” that lead to oppression, discrimination, and exclusion are, ultimately, possibilities not worth exploring. The ethics of the possible invites us to consider possibility as interdependent with what is real and not a separate category; together, they substantiate the joint reality we experience and try to improve with, for, and toward others (Glăveanu 2018).

Cross-References

- [Imagination](#)
- [Post-Truth](#)
- [Social Change](#)

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Potential

Giovanni Emanuele Corazza
DEI-Marconi Institute for Creativity, University of Bologna, Bologna, Italy
LAPEA, Université de Paris, Boulogne-Billancourt, France
LAPEA, IFSTTAR, University Gustave Eiffel, Versailles, France

Abstract

In this entry, the notion of potential is first introduced in its general meaning and then discussed for its role in creativity studies. In particular, by introducing the dynamic definition of creativity (Corazza, Creat Res J 28:258–267, 2016), which foresees that creativity is a context-embedded phenomenon requiring potential originality and effectiveness, this term becomes a central actor in the understanding of the complex creativity

phenomenon in all its multiple nuances. In order to cover all the important dimensions in creativity studies, three classification frameworks are used: the 4P's by Rhodes (Phi Delta Kappan 42:305–310, 1961), the 5A's by Glăveanu (Rev Gen Psychol 17:69, 2013), and the 4C's by Kaufman and Beghetto (Rev Gen Psychol 13:1, 2009). Exploiting these perspectives, 16 different forms of creative potential are introduced and discussed: individual creative potential, embedded individual creative potential, mini-c creative potential, little-c creative potential, Pro-c creative potential, Big-C creative potential, systemic process potential, embedded process potential, universal process potential, instantaneous product potential, experiential product potential, condensation potential, cultural evolution potential, socio-cultural context potential, action potential, and virtual world potential. These relevant forms of potential in the creative process interact in various ways to determine the overall level of potential originality and effectiveness in a creativity episode.

Keywords

Potential · Creativity · Dynamic definition of creativity · Creative potential

Defining Potential

The word *potential* comes from the Latin adjective *potis*, carrying two different meanings: capable or possible. Whereas *capable* normally refers to an individual who can perform an action or achieve an objective, *possible* is a wider category that can be associated to inanimate or animate entities, inserted in different natural, technological, or socio-cultural environments of different complexity, up to a cosmological meaning: the potential of the universe in terms of its possible courses of evolution. The eighteenth century had to come before the term potential started to be used also in its noun form, in association with the growing knowledge and fascination for electromagnetism, wherein the electrical potential is intended as a measurable physical entity associated to a quantity of accumulated charge. If the

charge is statically accumulated over an isolated capacitor nothing happens, but there is a latent potential for a (larger and larger) current as determined by loading the capacitor with (smaller and smaller) values of resistance. This physical notion became later a metaphor to describe human potential as a latent characteristic that may or may not be translated into actual realization depending on contextual conditions, which might favor or stifle its development. In the modern Merriam-Webster dictionary, potential is defined both as an adjective and as a noun. In the former case, the meaning is: “existing in possibility: capable of development into actuality”; as a noun, potential is defined as “something that can develop or become actual.” As can be seen, in both cases the term potential entails a mental projection onto the future through forecast, foresight, or anticipation (Corazza 2017a; Poli 2011).

Potential in Creativity

The notion of potential acquires a fundamental role in the realm of creativity studies. In fact, the term potential in its noun form finds a place inside the definition of creativity itself. The dynamic definition of creativity (Corazza 2016) posits that “creativity requires a *potential* for originality and effectiveness.” In Corazza and Lubart (2020, 2021), an extension of this definition is presented, which puts into evidence the fundamental role of situation: “creativity is a context-embedded phenomenon requiring *potential* originality and effectiveness.” Originality and effectiveness are classic requirements for a creative achievement, as reflected by the standard definition of creativity (Runco and Jaeger 2012): on the one hand, creativity entails originality, that is, the co-existence of novelty, nonobviousness, and authenticity (Corazza 2016). However, originality is not sufficient: at the same time, there must be a form of value, utility, appropriateness, and meaningfulness with respect to the concerned domain, all of which is covered by the effectiveness term.

The introduction of the term potential inside the definition of creativity serves to make a clear and fundamental distinction between creativity

and creative achievement. Indeed, the recognition of originality and effectiveness in a creative process cannot be intended as a static or objective assessment, but it is a dynamic and subjective act that can change over time, space, or culture. And this potential for recognition is embedded into a sociocultural context. Many examples can be brought as evidence to support this observation of the dynamic nature of creative assessment, but a most eminent one shall suffice here. Most of the discoveries and inventions by Leonardo da Vinci were not considered, understood, nor actualized in his time. Leonardo anticipated by hundreds of years the principles of anatomy, optics, geology, and hydrogeology, as well as the concepts of the tank, of the helicopter, of underwater exploration, and the list could continue. All these ideas, at the time of Leonardo, could not be considered as creative achievements, as their effectiveness was not recognized nor altogether comprehended. But given that Leonardo can arguably be considered the most creative person in the entire history of *homo sapiens*, being creative does not necessarily require creative achievement here and now, but only a *potential* for it. In other words, a very creative person holds a very high potential for originality and effectiveness, because he/she challenges the state-of-the-art, avoiding taking shared knowledge for granted, and produces visionary ideas. Quite often this activity does not lead to immediate recognition: this is a state that is identified as *creative inconclusiveness*, indeed a very important part of the creative process. To be creative, when the state of creative inconclusiveness is elicited, one must show resistance to frustration, strong determination, and self-belief in oneself as a creator.

Beyond the distinction between creative achievement and creative inconclusiveness in creativity, there is a second fundamental consequence of introducing the concept of potential inside the definition of creativity. The extraction of value from the outcomes of the process, which determines whether one is met with achievement or inconclusiveness, cannot be simply considered to be resolved as the activity of a judge or a board of judges. A judge would know what is right and what is wrong, what is creative in a domain, and

what is not. But the real value of a creative idea will only be seen *a-posteriori*, in the future, and no one can express definitive judgment about a yet unknown future. Therefore, the person interacting with the outcomes of a creative process should be thought of as an *estimator*, dynamically expressing reactions which might even lead to refinement of the ideas under consideration. The potential in a dynamic creative process is therefore the result of the interaction between all the actors involved in the process, the thinker(s), as well as the estimator(s).

Forms of Potential in the Creative Process

Given that creativity implies the existence of a potential for originality and effectiveness, it is important to understand where and in what form this potential can be observed. Following the lines presented in Corazza and Glăveanu (2020), it is useful to address this question by considering three of the most influential frameworks in creativity studies. Namely, the 4P's model by Rhodes (1961), including Person, Process, Product, and Press; the 5A's model by Glăveanu (2013), including Actor, Action, Artifact, Audience, Affordance; and the 4C's model by Kaufman and Beghetto (2009), encompassing mini-c, little-c, Pro-c, and Big-C forms of creativity. It should be clear that these dimensions are not mutually orthogonal; rather, they suggest different but partially overlapping points of view, as well as useful taxonomies, in addressing the nuances of the creativity phenomenon. Each of these strands in creativity studies has been shown to be the home of a different kind of potential (Corazza and Glăveanu 2020).

Individual/Person/Actor Creative Potential

The individual is perhaps the more natural starting point in the search for the meaning of potential in creativity. This dimension corresponds to the Person (4P's model) or the Actor (5A's model).

Indeed, the *individual creative potential* is the most classic understanding for potential in creativity studies, and its purpose is conventionally that of predicting whether an individual will be able to produce and enjoy creative success in a near or far future. Thus, this notion is typically tied to measurement techniques, which can be based on the production of small creative products (e.g., a short story, a drawing) and/or on the measurement of important resources such as divergent thinking (e.g., performance in an Alternative Uses Task). A test battery designed for the measurement of individual creative potential has been introduced in (Lubart et al. 2013). Studies have also been performed to determine the biological neural correlates to individual creative potential (for an overview, see Mastria et al. 2018).

However, a potential for future creative achievements is not at all a guarantee: potential can remain latent, it can be stifled or stimulated by the experiences in one's educational trajectory and, later, professional trajectories. The development of potential is always a bio-cultural process. Following Glăveanu (2013), the Actor or Person is always embedded in a field of social relations, and creativity is shaped by the surrounding socio-cultural context (Corazza and Lubart 2021). Therefore, the potential for originality and effectiveness of the Actor is also embedded and strongly influenced by context: given the same individual, his/her potential will change depending on the environment. We identify this form as the *embedded individual creative potential*. To measure one's embedded individual potential, it is not sufficient to use questionnaires, reports, or laboratory tests: it is necessary to include also direct observations in the field. The relevance of this indication comes from the fact that the creative potential of an Actor might change considerably when measured in a lab vs. observed in natural, everyday life environments.

Considering now the 4C's model by Kaufman and Beghetto (2009), the individual potential takes on four quite different, and more specific, nuances. Starting from mini-c creativity, this involves the personal epiphanies one experiences when discovering new ideas, new things,

new heuristics, etc. Every human being, even in the presence of severe pathologies, has a potential for these experiences, which we identify as the *mini-c creative potential*. The expression and growth of the mini-c creative potential is fundamentally influenced by early developmental experiences in life, as well as the entire trajectory in education. The design of education systems that provide useful stimuli in this sense is a critical and urgent issue, as well as the identification of new methodologies for the observation of dynamic interaction in a classroom, such as microlongitudinal studies (Beghetto and Karwowski 2019).

Considering a developed adolescent or an adult, little-c activities include hobbies, non-professional, or everyday creative endeavors. Depending on openness to experience, curiosity, and personal motivation, a form of *little-c creative potential* can therefore be identified. The larger this potential, the more likely an individual is to engage in nonprofessional vocational activities, which sometimes can be very important for one's well-being and freedom of expression. Indeed, it might appear that little-c creativity is a purely optional activity for an individual, far from being a necessity. However, when the concept of "organic creativity" is introduced (Corazza 2017b), defined as those conditions, attitudes, and actions that bear the potential to be at the same time productive in socio-economic terms and conducive to human well-being, it becomes clear that what is at stake is nothing less than human happiness (Csikszentmihalyi 1997). Adopting a socio-political perspective, it appears that policies and institutions introduced in our society play an important role in generating the conditions that allow citizens to conduct existences in which there are sufficient possibilities for engaging in creative activities, at least at the little-c level. The increasing average age in our societies, along with longer periods of retirement, shorter working weeks, as well as the growing introduction of anthropomorphic and non-anthropomorphic forms of artificial intelligence, are all factors that point to the growing importance of favoring the population's little-c creative potential as a policy.

Further, it is important to address the Pro-c levels of creativity, pertaining to professional creativity and innovation endeavors. When Guilford delivered his famous speech on creativity at the APA conference in the middle of the twentieth century (Guilford 1950), advocating the urgent need for psychologists to study this fascinating construct also in view of dramatic socio-political changes after World War II, he certainly had in mind as a target the development of the *Pro-c creative potential* for the American population. The aim was that of empowering industry and commerce with a potential for continuous innovation, leading to the outstanding progress that transformed the Industrial Society into the current Information Society. Unfortunately, for many decades this potential was not coupled with a sensitivity for the sustainability of the industrial progress and the preservation of natural resources and of the environment in general. In the first half of the twenty-first century, we are witnessing the dramatic effects of this oversight, and we are in urgent need for redirecting the power of the *Pro-c creative potential* of our populations to include ethical and sustainability values along with performance and economic values.

Finally, it is necessary to conclude this section on individual creative potential by considering Big-C creativity, that is, its most eminent form. This was in fact the starting point for creativity studies when Galton (1869) began to observe possible hereditary schemes with the families of geniuses. Undoubtedly, it would be too ambitious and unrealistic to predict Big-C creativity; therefore, *Big-C creative potential* is typically observed in hindsight, by searching for the conditions that led a person in a specific time epoch to produce ideas and artifacts that changed the course of development of the arts, science, or technology (Albert 1983; Eysenck 1995).

Process/Action Creative Potential

A creative process is a complex system, involving several diversified resources in terms of available time, available relevant information, level of

expertise in the domain, level of expertise in creativity, available materials, organizational factors, social factors, the adopted strategies, the challenges to be faced, etc. (Corazza and Agnoli 2015). The overall ensemble of these resources generates a new form of potential, identified as *systemic process potential*. As an example, the level of the challenge has a critical influence on the originality and effectiveness that could be achieved through systemic process potential. This can be immediately realized if one compares the potential of writing a short essay with respect to a book. The potential for originality and effectiveness is much larger in the second case, because of a change not in the individual creative potential, but in systemic process potential. As a second reflection, consider the fact that systemic process potential depends on the resources and institutions available in a specified socio-economic environment. This is the reason why we expect certain innovations to come from specific parts of the world and not others. Systemic process potential is therefore heavily affected by both intrinsic and extrinsic constraints; while the former can be modified by the Person/Actor, the latter are usually beyond our control.

A Process/Action always contains a dialogue between several Persons/Actors, some directly involved and some only marginally, but each one contributing to the richness of the embedding sociocultural framework. The more intense the dialogue, the higher the creative potential. Therefore, an *embedded process potential* can be defined, which depends fundamentally on the levels of dynamic collaboration and co-creation. For example, in the case of a co-creation episode involving two Persons/Actors, the embedded process potential of the ensuing Process/Action will be very different from the simple sum of the individual creative potential of the two separate Actors: their complex interaction can afford the emergence of unpredictable trajectories. This does not always bear a positive effect: depending on interpersonal dynamics, co-creation can also become very troublesome and negative, so that the embedded process potential of this episode could also be lower than either of the two separate individual potentials.

On the other hand, it is impossible for a creative process to produce an isolated episode. All creativity episodes are concatenated, as humans cannot create ex-nihilo. The notion of process can therefore be extended to the Dynamic Universal Creativity Process (DUCP; Corazza 2019), which encompasses four layers of complexity: material, biological, psycho-social, and artificial. The DUCP provides a framework of explanation for the evolution of our cosmos since its inception (Corazza and Lubart 2020), and this view is in line with the cosmology of Alfred North Whitehead, as delineated in his Process Philosophy. Now, it should be clear that not all parts of the universe are evolving at the same pace: therefore, the notion of *universal process potential* can be introduced to indicate the potential of a specific creativity episode as a function of its position within the DUCP. For example, if new materials are brought back from the exploration of Mars surface, then a creativity episode in the domain of material science will enjoy a higher universal process potential.

Product/Artifact Creative Potential

It is very interesting to note that once a Product takes form as the outcome of a creative process, it begins to live a life of its own, which often transcends the creative Person, and that enjoys several forms of potential to produce an experience of originality and effectiveness in those that come to interact with it. The first distinction to be made is between Products that are consumed in real-time (e.g., a live performance, a ballet, music improvisation) and those long-lasting Products that remain available through time, and whose impact is mainly measured in the future (paintings, sculptures, innovations in products and services, scientific theories, etc.). On the other hand, even a real-time Product can leave a long-lasting trace in our episodic memory, if the experience has left the Audience in awe. Therefore, for real-time Products we can introduce an *instantaneous product potential* (which will be larger depending on the intended originality of the performance with respect to other existing

styles, as well as on its supposed effectiveness), but also an *experiential product potential*, representing the potential for a long-term effect in the memory of the Audience.

Considering long-lasting Products, the notion of *condensation potential* can be introduced. As defined in Jackson and Messick (1964), “condensation” is a characteristic of Products that do not reveal all their essence upon first experience, that are future oriented, that we seek to re-examine and re-experience over and over. A fitting example could be represented by Bernini’s sculptures in Villa Borghese (Roma, Italy), characterized by a level of breathtaking beauty so high that it is possible to enjoy them over and over across the years without ever feeling that their condensation potential is exhausted. Moreover, if the condensation potential of a Product is high, even if it is not well received at the time of its output from the creativity episode, the experience and the consequent assessment can be turned upside down later (perhaps even centuries later, see the above discussion on Leonardo da Vinci). As an example, the paintings by Vincent Van Gogh were completely neglected during the painter’s life, but they had a large condensation potential, which only after several tens of years from the painter’s death passed from a latent to an explicit state.

Finally, adopting the 5A’s model to refer to Products as “Artifacts” gives evidence of their nature as elements of culture, as well as to the cumulative growth of human culture in the course of our evolution as a species. From this perspective, the instantaneous product potential, experiential product potential, and condensation potential of an Artifact should be assessed in terms of the contribution that the Artifact can give to the evolution of human culture, yielding a fourth form identified as *cultural evolution potential* of a Product. This does not always correspond to a positive effect. A couple of examples are in order, starting from a negative one. An invention with a very high experiential potential could have in the end a very low cultural evolution potential if, at the same time, another invention is generated with a higher potential for immediate effectiveness. So, competition in a domain

produces dynamics in the potential of Artifacts. On the other hand, in the 1970s, a standard technology for glass production suddenly became a cutting-edge technology when optical fibers were invented (Cattani 2006), providing an example of latent cultural evolution potential that became explicit when the opportunity arose.

Press/Audience/Affordance Creative Potential

It is finally possible to focus the attention of the characteristics of the Press, the environment, the Audience, and the provided Affordances without necessarily instantiating a creativity episode. This means that an environment itself can be endowed with various forms of creative potential, which will then interact with individual, process, and product potentials. Three forms of potential associated to this dimension can be envisaged: the *sociocultural context potential*, the *action potential*, and the *virtual world potential*.

The sociocultural context potential descends from the fact that changing situational elements can have very significant effects on a creativity episode and its potential for originality and effectiveness. When studying creativity, performing an experiment in a “neutral” laboratory setting vs. creating the conditions for the introduction of real-world situational variables can change the results of experiments. For example, Kimmelmeier and Walton (2016) have shown that women outperform men in originality when the focus area involves providing benefits to others, but this effect disappears when an element of threat is added to the environment. These results are not only interesting, but they also significantly differ from the generally accepted notion that there are no gender differences in creativity (Baer and Kaufman 2008), providing evidence of the existence of a gender-dependent sociocultural context potential.

On the other hand, the *action potential* descends from material culture (Corazza and Glăveanu 2020) and is a characteristic of the affordances in the surrounding environment. The action potential grows larger for larger

possibilities of use and interaction with material entities. Imagination can be used to enlarge the set of possible affordances, which means that individual creative potential interacts with action potential.

To complete this section, it is important to turn the attention to the fact that new information and communication technologies (Corazza et al. 2010; Feather 2013) give the possibility to create virtual worlds, and these artificial environments can embed creative processes, in which the Actors can be represented as themselves or through the mediation of an avatar. How these virtual environments affect the creative process is still a largely open question, but we can immediately introduce the notion of *virtual world potential*, which encompasses the effects of these new forms of social interaction, as well as the digital affordances of virtual objects. The impact of these artificial elements on the creative process is being studied (e.g., Guegan et al. 2017), and the results appear to be promising.

Conclusions

This entry is focused on showing the reader that the concept of potential is a fundamental element in creativity studies. In fact, the dynamic definition of creativity foresees that creativity is a context-embedded phenomenon requiring a potential for originality and effectiveness. By considering the 4P's, 5A's, and 4C's models for creativity studies, it is possible to introduce sixteen different forms of potential, which are reported here for convenience:

- Under the Person/Actor dimension: individual creative potential, embedded individual creative potential, mini-c creative potential, little-c creative potential, Pro-c creative potential, and Big-C creative potential
- Under the Process/Action dimension: systemic process potential, embedded process potential, and universal process potential
- Under the Product/Artifact dimension: instantaneous product potential, experiential product

potential, condensation potential, and cultural evolution potential

- Under the Press/Audience/Affordance dimension: sociocultural context potential, action potential, and virtual world potential

It is important to note that these different forms of potential are characterized by strong mutual interactions, and the study of these interactions is still an open question for scientific research.

Cross-References

- [Affordance](#)
- [Anticipation](#)
- [Avatars](#)
- [Awe](#)
- [Creative Inconclusiveness](#)
- [Creativity](#)
- [Curiosity](#)
- [Divergent Thinking](#)
- [Emergence](#)
- [Forecasting](#)
- [Foresight](#)
- [Heuristics](#)
- [Imagination](#)
- [Openness to Experience](#)
- [Perspective](#)
- [The Possible in the Life and Work of Alfred North Whitehead](#)
- [Values](#)

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Potential Images

Nicoletta Isar

Copenhagen University, Copenhagen, Denmark

Keywords

Potential images · Potentiality · The possible · Visual ambiguity · Accidental images · Creativity · Play

Definition

“Potential images” is a term coined by art historian Dario Gamboni to designate a specific category of ambiguous, indeterminate images. Their ambiguity creates new potentialities for stimulating the spectator’s imaginative, perceptual response, as opposed to purporting to convey furthering determined perceptions and interpretations (Gamboni, 2002, p. 8).

Introduction

This entry will present some theoretical frames and empirical cases and modes associated with the operation of potentiality of image from a historical perspective, especially to demonstrate the fruitfulness of using “accidental” images and imaginative perception for the invention of pictorial subjects. This specific dimension of the artistic process reveals the playful side of creativity. Other

theoretical positions in art history and the philosophy of culture reveal new modes of instantiation of the potentiality of image. Apart from the ambiguity of image, the indeterminacy of image as discussed by Gottfried Boehm (Boehm, 2002) – as opposed to determination (sharpness) of image – reveals itself as a quality of image; the “productivity of the lack” (due to the indeterminacy of image) creates an *iconic difference*, that is, the fundamental *possibility* of differentiation between images and non-images. Similarly, the disruption of the determinism in the image, defined by Oliver Grau as *immersion* (Grau, 2003), based on the impossibility of distinction between images and non-images, draws the observer into virtual reality. Immersive images create a new potential dimension of reality that has become undistinctive in relation to its original reality.

An important part of this entry is devoted to the potentiality of image rooted in the very conception of a work of art itself, the act of creation. This theoretical position is advocated by a handful of art historians, such as Henri Focillon, Aby Warburg, and Hans Belting, as well as philosophers like Henri Bergson and Giorgio Agamben. On different voices and various theoretical registers, they sustain the same idea: an unforeseeable novelty and potentiality do exist in the world, and the most poignant examples are to be found in the realm of the arts. This anti-determinist position rejects art-historical explanations that try to account for the evolution of artistic form exclusively through contextual factors and that deny any possibility of free will; instead, human

freedom is reflected in human creativity as a source of potentiality of image beyond determination. This entry will place these ideas into a dialogue with Focillon’s theory of art, nourished by the philosophy of Henri Bergson, and finally move onto the theory of potentiality developed by Giorgio Agamben.

Ambiguity and Indeterminacy – The Potential and the Possible

It has been argued that accidental likenesses, either in their natural configurations or as aniconic human marks, play a decisive role when figurative or geometric forms first were used as proxies for human images. Concepts such as “ambiguity” and “accidental resemblance” have been used to sustain the thesis around the origin of art (Lorblanchet, 1999, pp. 9–40). Finbarr Barry Flood has shown that since Antiquity through the Middle Ages and beyond, in Modernity, the use of marble as a medium was capable of producing a mimetic effect of the fluid appearance of the walls (Flood, 2016, p. 181). According to him, the “aniconic” images created by marble are “natural images,” that is, images not made by human hands, but “produced by the (direct or indirect) operation of providence itself.” Thus, they are “God’s wonder” (Flood, 2016, p. 210). This aniconic or non-representational image is in fact not an image (or a re-presentation) but pure medium in its immanence, marble as frozen water, nature’s manifestation – a form of God’s creation (Fig. 1a, b).



Potential Images, Fig. 1 (a and b) Interior of the Imperial Church of Hagia Sophia Constantinople (sixth c.) with marble revetments as water simile (private images)

The potentiality of expression of image remains as late as in the Renaissance, when, for example, Alberti in his treatise *De statua* (Alberti, 1972) suggests that the first sculptors had been inspired by noticing in “a tree-trunk, a clump of earth and other similar objects . . . features which, slightly transformed, could be made to resemble completely natural shapes” (Janitschek, 1970, p. 254). The awareness about the creative power generated by accident and imagination is attested in the writings of Leonardo, who perceived artificial production like, for example, the “rough sketch” (*componimento inculto*) as inspirational because “in confused things the mind is aroused to new discoveries” (Leonardo da Vinci, 1956, pp. 35–36). Italian art historian Giambattista Armenini (1587) attempts to elucidate the meaning and presence of the antique grotesques as suggested by “the holes or stains seen in walls that were once completely white” (Morel, 1997, p. 38). Such hypotheses about the origin of art are validated by empirical observations of prehistoric artifacts and cave paintings, notably those by the archaeologist Abbé Breuil at the beginning of the twentieth century and by psychologist G.-H. Luquet in 1926 (Gamboni, 2002, p. 11). The potentiality of image yielded from such accidental imagery latent in nature is the expression of human creativity and human disposition for play.

Imaginative or projective perception has also associated the practice of divination with the early stages of writing in, for example, Mesopotamia and China. This interesting thesis suggests that divination rationalized images and thus made the invention of writing possible. Such a perspective confers images a greater freedom because unlike language, the image needs only an observer to communicate. Ambiguous forms embedded in natural objects stimulate human invention, but new is the idea of the invention of reading as a means of understanding visual messages, as an outcome of rationalizing their messages derived from divination performed by soothsayers (Christin, 1995, p. 103).

The theory and the practice of modern art have been involved in the observation of this phenomenon and made ambiguity a central element of their relationship with the viewer. In his *The*

Creative Act (1957) Marcel Duchamp coined the term “art coefficient” as the “arithmetical relation between the unexpressed but intended and the unintentionally expressed,” followed by his famous dictum: “*Ce sont les REGARDEURS qui font les tableaux*” (“It is the ONLOOKER who makes the pictures”) (Duchamp, 1975, p. 247). From this moment, the notion of “intention” of the artist became problematic in modernity. Duchamp ascribed to the artist solely a “mediumistic role” (Duchamp, 1957, pp. 138–140). The artist is a “mediumistic being” who does not really know what he is doing or why he is doing it. It is the spectator who, through a kind of “inner osmosis,” deciphers and interprets the work’s inner qualifications, relates them to the external world, and thus completes the creative cycle. The field of play, the operation of chance as the expression of such opposition between chance as distraction and lack of sense creates unexpected potentialities that one must take (“take” the chance), a chance that goes beyond the plausible. Duchamp’s nonsense converts the given and the banal into apparitional potency (Sewell, 1952, pp. 55–80, 115–29).

In defining his concept of indeterminacy, Gottfried Boehm is inspired by Wittgenstein’s syntagm “the image has *Spiel*.” He invites us to inquire into the play of image to see how “spaces for free play create unpredicted possibilities,” “the intensification of iconic potentiality” (Boehm, p. 220). He argues that amorphous visual data, as in the painting of Cezanne and other impressionists (Fig. 2), “renew the perception of nature by way of the ambiguity of seeing” (Boehm, p. 221) and allow for “the creation of new plausibilities.” Cezanne calls this process “sensation” or “sensation colorante” (Boehm, p. 222). Sensation, according to Boehm, “opens the door to that potentiality of the image through which the lack of determinacy becomes a surplus of meaning. Its logic is connected to the difference of energies, to the organization of visual forces” (Boehm, p. 222). He claims, “We have identified this energy in the potential that inhabits indeterminacy” (Boehm, p. 228). Boehm defines the *Spiel* of image operating within this play of unpredictable iconic potentialities that create unpredictable possibilities, linking thus the



Potential Images, Fig. 2 Claude Monet, *Rouen Cathedral: Facade (Morning effect)*, 1894, Folkwang Museum Essen, Germany. [https://commons.wikimedia.org/wiki/File:Claude_Monet_-_Rouen_Cathedral,_Facade_\(Morning_effect\).JPG](https://commons.wikimedia.org/wiki/File:Claude_Monet_-_Rouen_Cathedral,_Facade_(Morning_effect).JPG)

possible and the potential. The logic of image is defined as “the iconic difference in which an ‘impossible’ synthesis occurs” (Boehm, p. 228). Taking Husserl’s thought on “shading” one step further, Boehm envisages how “in every perception of ‘something’, an exciting, an ‘impossible’ synthesis of the visible and invisible, of the thematically identifiable and the non-thematic horizon takes place” (Boehm, p. 227). The source of the indeterminate that inhabits the differences of energies is “the locus of imagination” (Boehm, p. 226).

The Life of Forms – Forms of Life. Vital Forces and Potential Images

In his *The Life of Forms in Art* published in 1935, Henri Focillon presents his theory of art, arguing against any art-historical explanation that tries to account for the evolution of artistic form

exclusively from a deterministic point of view. He sums up his view in a referential epigrammatic form: “The most attentive study of the most homogenous milieu, of the most closely woven concatenation of circumstances, will not serve to give us the design of the towers of Laon” (Focillon, *The Life of Forms*, p. 149; Focillon, *Vie des formes*, p. 63) (Fig. 2).

Focillon argues that the study of the work of art will always be insufficient and will not completely serve to account for its entire dimension. The potentiality of the work of art (image) resides in its own form and exceeds the expectation of the viewer, which emerges in the process of its perception. The work of art is for Focillon a singular event, bringing absolute newness into the world. This quality of the work derives from the nature of its artistic form. The metamorphic nature is characteristic of form itself, as opposed to the static notions of image or of sign: “For form is surrounded by a certain aura: although it is our most strict definition of space, it also suggests to us the existence of other forms. It prolongs and diffuses itself throughout our dreams and fancies: we regard it, as it were, as a kind of fissure through which crowds of images aspiring to birth may be introduced into some indefinite realm – a realm which is neither that of physical extent nor that of pure thought” (Focillon, *The Life of Forms*, pp. 34–35; Focillon, *Vie des formes*, 1934, p. 7). The work of art is, as Focillon put it, “the record of an activity that has been in a way set down or incarnated, and which is constantly awaiting reactivation” (Focillon, Introduction by J. Molino, *The Life of the Forms*, p. 20). Indeed, Focillon argues that “form is not only, as it were, incarnated, but that it is invariably incarnation itself” (“[N]on seulement comment la forme est, en quelque sorte, incarnée, mais qu’elle est toujours incarnation”) (Focillon, *The Life of Forms*, 101; Focillon, *Vie des formes*, p. 39). Therefore, form is not a static reality, but “inhabited by a tension, a dynamism that lines it and animates it from within” (Focillon, Introduction, *The Life of Forms*, p. 20). “It [the work of art] lies under our eyes and under our hands as a kind of extrusion upon a world (*une sorte d’irruption dans un monde*)” that has nothing whatsoever in

common with it save the pretext of the image in the so-called ‘arts’ of imitation” (Focillon, *The Life of Forms*, p. 34; Focillon, *Vie des formes*, p. 7).

Here some connections between Focillon and Bergson become apparent, especially as concerns the vitalism the two thinkers share. As suggested in the very title of his book, *The Life of Forms in Art*, Focillon saw artistic forms as living entities, evolving and metamorphosing over time. Focillon’s conception of art forms invested with life owes much to Henri Bergson’s philosophy and his vitalism, as well as to his view of the continuous, living transformation over time, as outlined in Bergson’s first and most important book, *Time and Free Will* (1889). Bergsonian ideas are already reflected in Focillon’s conception of artistic form as an open potentiality rather than as a finished process in his analysis of Hokusai’s art (1914), a breakthrough in art history. By 1935, Focillon published *The Life of Forms in Art*, his philosophy of history of art. In his most popular book, *Creative Evolution* of 1907, Bergson argues that the greatest proof of the possibility of novelty – and, as such, the best counterproof to determinism – came from the artistic realm, an idea that was no doubt appealing to Focillon who felt a special affinity with Bergson’s mode of thinking. Bergson sensed the unforeseeable dimension inherent in the work of art: “The finished portrait is explained by the features of the model, by the nature of the artist, by the colors spread out on the palette, but even with the knowledge of what explains it, no one, not even the artist, could have foreseen exactly what the portrait would be” (Bergson, 1944, p. 9). For “the portrait will surely resemble the model and will surely resemble the artist; but the concrete solution brings with it that unforeseeable nothing which is everything in a work of art” (Bergson, 1944, p. 370). Like Bergson, Focillon grounds his thinking in the living body’s – whether it is the viewer’s or the artist’s – confrontation with the artwork in all its physicality. For the secret of the singular mode of existence that characterizes the work of art, argues the art historian, is that “the art object is distinct from others because of the double relation of production and reception that links it to humanity, artist and

viewer.” “In other words, a work of art is not the outline or the graph of art as an activity; it is art itself. It does not design art; it creates it” (Focillon, Introduction, *The Life of Forms*, p. 20). This creative dimension embedded in the work as a potential force is a continuous expression that differentiates it from other things. And it only exists as such only insofar as all links attaching it to its creator have been severed and made available for a potentiality that emerges within the dialogue of the work with its viewer, beyond any kind of determinism.

Inspired by Bergson, Focillon criticizes both the notion of a homogenized, spatialized notion of time and the notion that context and belief comprise a one-sided causality of the process of artistic creation. He turns to architecture to praise its capacity to create ever new, potentially unforeseeable environments. “It invents a world all its own” (Focillon, *The Life of Forms*, p. 149; Focillon, *Vie des Formes*, p. 63). Like all other artistic creations, architecture is an example of invention and novelty for it acts directly upon society, breaking the determinist logic of development. Discussing the potential infinite number of conditions that could influence the creation of art, Focillon writes: “In those imaginary worlds [of art] in which the artist plays the role of geometer and mechanic, of physicist and chemist, of psychologist and historian at once, form, through the play of its metamorphoses, perpetually goes forward, by its own necessity, toward its freedom” (Focillon, *The Life of Forms*, p. 156; Focillon, *Vie des Formes*, p. 67). He further substantiates this affirmation of freedom over determinism, a direct influence from Bergson, in the realm of art and society.

In Focillon’s theory of art, the notion of style is equally applicable to everything including the art of living. What qualifies style is the material and technique, where technique is not the automatism of the craft, but “a whole poetry of action” (“une poésie toute d’action”), “the means for the achievement of metamorphoses” (“le moyen des metamorphoses”) (Focillon, *The Life of Forms*, pp. 102–103; Focillon, *Vie des formes*, 39–40). Two intimately related aspects of activity are engaged in the technique of the work of art: first,

the trade secrets of a craft, and second, the manner in which these trade secrets bring forms in the realm of matter to life. But as Focillon argues, in examining a work of art we must go beyond mere craft techniques and trace to its source an entire genealogy. This would amount to the reconciliation of passivity with freedom, of “inertia and action” mediated by touch. There is a sense of motion in the “rapidly changing” metamorphosis of forms evolving in this process before the work attains its ultimate form. Focillon employs more than once a musical analogy to describe the “impatient metamorphoses” of form released “under our very eyes, exactly as the pianist’s execution develops a sonata” (Focillon, *The Life of Forms*, p. 105; Focillon, *Vies des forms*, p. 41). The term “impatience” with regard to the technique used by Focillon sounds unclear, but as he argues, nothing could better exhibit this process [than] “the impatience of technique” in respect to its craft: “that technique must extract from matter forces that are still vital and not vitrified beneath a flawless varnish” (Focillon, *The Life of Forms*, p. 106; Focillon, *Vie des forms*, p. 41). To clarify this, Focillon makes again a musical comparison. He argues that the painter sees just as the musician hears, not in musical or pictorial abstractions, but in a sensuous manner. Specifically, the painter sees as the musician hears, not in numeric intervals but in timbers: the painter sees not the abstractions, but the tones, the modeling, and the touch. The touch is the true contact between inertia and action. The touch is an important concept for Focillon, a fluid, phenomenological concept. With the language of touch, the artist composes the language of sight – a “warm” tone, a “cool” tone, a “heavy” tone, a “hollow” tone, a “hard” line, and a “soft” line. “For touch is at the very beginning of Creation.” “Adam was molded of clay, like a statue” (Focillon, *The Life of Forms*, p. 167; Focillon, *Éloge de la main*, p. 9). Rodin’s work “The Creation” (or “The Hand of God”) (Fig. 3), by which the sculptor represents the six days of creation (modeled ca. 1896–1902, carved ca. 1907), which starts up from the block in which the forces of chaos lie dormant, is a formidable metaphor for Focillon (Focillon, *The Life of Forms*, p. 167, Focillon, *Eloge*, p. 9).



Potential Images, Fig. 3 Auguste Rodin, *The Hand of God* or *The Creation*, modeled ca. 1896–1902, carved 1908, The Metropolitan Museum of Art, New York. https://commons.wikimedia.org/wiki/File:RISD_Rodin_Hand_of_God_02.JPG

The hand is the *princeps organon* for the artist: “The hand that is in his mind is at work. It creates the concrete within the abstract, and weight within the imponderable” (Focillon, *The Life of Forms*, p. 123; Focillon, *Vie des forms*, p. 49). Here, in this alchemical transformation, in the imponderable we find perhaps the essence of Focillon’s theory of form, the outermost edge of form expression, its *akmê*. This salient moment in the history of forms, argues Focillon, finds its high point of bloom in Classicism in contrast with academic art. Focillon presents his *akmê* of the form art and LIFE as the pure expression of a potential image:

Classicism: a brief, perfectly balance distant of complete possession of forms; not a slow and monotonous application of ‘rules,’ but a pure, quick delight, like the *akmê* of the Greeks, so delicate that the pointer of the scale scarcely trembles. I look at this scale not to see whether the pointer will presently dip down again, or even come to a moment of absolute rest. I look at it instead to see,

within the miracle of that hesitant immobility, the slight, inappreciable tremor that indicates life. (*Life of Forms*, p. 55, *Vie des forms*, 16)

This is a turning point in the history of artistic forms for Focillon – the peak of life forms, the instant touch of life. This reveals itself as a pure and quick delight experienced in the pointer of the scale. In its delicate tremor, the form performs a sort of “rite of passage” forever hesitant between immobility and trembling. This “critical instant” in space and time is for Focillon a figure of potentiality. Focillon’s *akmê* metaphorically expressed in the imponderable is evocative of the Bergsonian “falling body,” viewed too as an *akmê* and *telos* by the philosopher of *Creative Evolution* (Bergson, 1944, pp. 359–360; Bergson, 1907, p. 193). The falling body with its cinematic disposition of movement seems well captured by the instantaneous photography or by the galloping movement: “a form that appears to radiate over a whole period and so fill up a time of gallop.” “It is this attitude that sculpture has fixed on the frieze of the Parthenon” (Bergson, 1944, p. 361; Bergson, 1907, 194). For both authors, these patterns of form and imagination – Focillon’s tremor of the pointer of the scale and Bergson’s figure of the gallop – are exemplary modes to express the potentiality of image, the suspension of law of physics, and of all determinism. The point of touch between inertia and action, between inspiration and resistance, is the potential. The impact of these specific patterns of thought to carry the potential in Bergson and Focillon’s works is remarkable, especially after the insights of French philosophers of potentiality, most notably Giorgio Agamben, are brought into the discussion.

Agamben’s Form of Life

Giorgio Agamben’s theory of potentiality of artwork thought in relation with his view on work (*opera*) is presented in his book, *Creazione e anarchia. L’opera nell’età della religione capitalista* (Creation and Anarchy: The Work in the Age of Capitalist Religion). Asking the question “what is the work (*opera*)?” Agamben goes back to the opposition between potentiality and

actuality presented in Aristotle’s *Metaphysics*. Unlike Aristotle, Agamben provocatively puts forth the idea that potentiality is not just what is actualized, embodied in the work, but also what could not be actualized. *Adynamia* is not a mere lack of potency, but the potency-of-not-being turned into actuality of the work. For Agamben, every human potential is constitutively impotential: “[T]he human is the living being that exists eminently in the dimension of potential, of being-able-to and being-able-not-to” (Agamben, 2019, p. 20). Therefore, the act of creation – *poiesis* as production – resists the full accomplishment of converting potency (*dynamis*) into act (*energeia*). Giving a new meaning to the potency-of-not in a work of art, Agamben projects a new view on potency, which is something not fully exhausted in the accomplished act of creation. Thus, the work is the outcome of a dialectic between the potency-of, conceived as the impersonal element or “inspiration,” and the potency-of-not, the personal element that resists actualization. Potential is an ambiguous being that not only is capable both of something and of its opposite, but also contains in itself an intimate and irreducible resistance. The act of creation is “a field of forces stretched between potential and impotential, being-able-to and being-able-not-to, acting and resisting” (Agamben, 2019, p. 20). To untangle this field of apparently contradictory forces engaged in the act of creation, Agamben turns to Focillon’s *akmê* associated with the classical form and presented already above. Walter Benjamin quotes this very same passage in his notes on the character of the dialectical image – the vision of the delicate tremor of the pointer of the scale, hesitant between immobility and trembling:

What is at stake is, rather, that ‘light, imperceptible trembling’ in the very immobility of the form, which, according to Focillon, is the insignia of classical style. (Agamben, 2019, p. 21)

Focillon’s pattern of the trembling pointer of the scale finds a remarkable echo in Agamben’s further elaboration on the potential: he offers an alternative vision coming from Dante’s poetics, namely, the trembling hand of the artist. This Dantesque line is the nexus of Agamben’s theory of inoperativity: *l’artista / ch’a l’abito de l’arte ha man che trema*

(the artist who has the habit of art has a hand that trembles; *Paradiso* 13.77–78) or, according to another reading, *ch' ha l'abito de l'arte e man che trema* (who has the habit of art and a hand that trembles; Agamben, 2019, p. 21). The trembling gesture is not a failure of the artist's hand, but a virtue, just as the trembling pointer is for Focillon the *akmé* of form. As Agamben clarifies, there is no contradiction between habit and hand in the act of creation, but this is the perfect expression of the twofold structure of every authentic creative process, suspended between two contradictory urges: thrust and resistance, inspiration and critique. This principle pervades the entire poetic act, for habit already contradicts inspiration, which comes from elsewhere and cannot be mastered by habit. In this sense, the resistance of the potential-not-to, by deactivating the habit, remains faithful to inspiration and almost prevents it from reifying itself in the work: the inspired artist is without work (Agamben, 2019, p. 22).

Agamben goes on making Dante's poetic line a principle in his interpretation of the act of creation and provides a new fresh reading of Titian's *Annunciation* (Fig. 4), elaborating on the trembling hand of the artist, a trembling that is not a deficiency, "but this trembling is supreme mastery" (Agamben, 2019, p. 23).

Titian's magnificent canvas, housed in Venice's San Salvador church, arrests the viewer's



Potential Images, Fig. 4 Tizian (Tiziano Vecellio), *The Annunciation*, 1559–1564, Church of San Salvador, Venice. <https://gallerix.org/pic/T/889526648/5247.jpeg>

eyes especially with its "crackling magma" where "flesh trembles" even [in] the wings of the angels, where "lights fight the shadows" (Agamben, 2019, p. 22). The painter's unusual signature seems to betray something of the wrestling hand with the painterly lava: *Titianus fecit fecit* ("made it and remade it"), that is, almost unmade it (Agamben, 2019, p. 23). Another line on the bottom of the painting below the flower pot reads: *ignis ardens non comburens*, which iconographically refers to the Biblical bush from Exodus (Ex. 3:2–4), which burns without ever being consumed, a metaphor for the Virgin's purity. Agamben's point is that this Latinized quote of the Biblical saying might have been inserted by Titian precisely to stress "the specific character of the act of creation, which burned on the surface of the canvas without, however, being consumed – a perfect metaphor for a potential that is in flames without exhausting itself" (Agamben, 2019, p. 23). It is why the artist's hand trembles, argues Agamben, "his trembling is his supreme mastery." "What trembles and almost dances in the form is potential: *ignis ardens non comburens*" (Agamben, 2019, p. 23). For, as Agamben put it,

mastery is not formal perfection but quite the opposite: it is the preservation of potential in the act, the salvation of the imperfection in the perfect form. In the painting of a master or on a page from a great writer, the resistance of the potential-not-to is marked in the work as the intimate mannerism present in every masterpiece. (Agamben, 2019, p. 21)

It is this indefinable holding-back amidst the plenitude of the work, the kind of restraint, and tact, that Agamben calls "inoperativity." "In a word – and this is, at least in art, the decisive element – its *grace*" (Agamben, 2019, p. 28).

More than 30 years later, El Greco depicted the same event of the *Annunciation* (Fig. 5) with enflamed bush. The vibrant quality of the painting surface and the energetic use of *colore* create a vision similar to the unconsumed mystery of Titian that Agamben saw as the unexhausted figure of potentiality. The singular, inscrutable character of El Greco that unites "the transcendental" with "the immediate" derives from the fusion between two impossible moments, the Byzantine



Potential Images, Fig. 5 El Greco (Doménikos Theotokópoulos) – *The Annunciation*, ca. 1596–1600, Bilbao Fine Arts Museum, Bilbao, Spain. https://upload.wikimedia.org/wikipedia/commons/7/71/El_Greco_-_28Dom%C3%A9nikos_Theotok%C3%B3poulos%29_-_The_Annunciation_-_Google_Art_Project_%28807333%29.jpg

transcendentalism and the Renaissance illusionism, an intriguing parallelism that could not reduce El Greco's work to a simple reflection of Spanish mysticism (Yasunari Kitaura, 2003, p. 64). This might explain El Greco's note in the margins of his personal copy of Vitruvius's *Ten Books on Architecture*: "Painting deals with the impossible" (*La pintura trata de lo imposible por lo mismo imperfecta*). El Greco's impossible work appears to be a symptom of preservation of potentiality in the act, "the salvation of the imperfection in the perfect form."

Conclusion

"Potential images," and the related concept "potentiality," have been theorized within the

field of art history and the theory of image, as well as in philosophy. Specific patterns of vision, such as ambiguity, indeterminacy, immersion, hidden images, and the barely perceptible trembling of the artist's hand, create new potentialities for image, stimulating the spectator's imaginative response through the participation of the onlooker. Such an aesthetic experience depends upon an active collaboration between artist, artwork, and onlooker, adding ever new potentialities to image perception. This entry has presented some important aspects of potentiality from a historical perspective and discussed some modes of the operation of potentiality of image, especially to demonstrate the fruitfulness of accidental images and imaginative perception for the invention of the pictorial subject and to point out to a specific dimension of artistic creativity that reveals the playful side of the phenomenon. The anti-determinist positions outlined by various theoretical stands reject art-historical explanations that try to account for the evolution of artistic form through exclusively contextual factors and that deny any possibility of free will and human freedom reflected in human creativity as a source of potentiality of image beyond determination. Agamben's view of the potential with reference to the work of art inscribes itself in a long position in Western philosophy and stands out as well as an act of resistance, where to resist always means to free a potential of life. It is a potentiality that "does not precede the work, but accompanies it and makes it live ... The life that contemplates its own potentiality to act and not to act becomes inoperative in all its operations, lives only its livableness." The trembling hand is supreme mastery for "mastery is not formal perfection but quite the opposite." It is an enduring poetic metaphor of *mannerist* potentiality. For Agamben, life is preserved in and as form: what he calls form-of-life.

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Pragmatism

Guilherme Sanches de Oliveira

Department of Biological Psychology and Neuroergonomics, Technische Universität Berlin, Berlin, Germany

Abstract

Pragmatism is a school of thought popularized in the beginning of the twentieth century by American psychologist and philosopher William James. Although most widely known (and criticized) for its theory of truth, pragmatism is a far broader position, connecting to issues in psychology, education, ethics, religion, and politics. This entry gives an overview of pragmatism particularly as developed by James. It begins by describing pragmatism's historical development and presenting the pragmatist contribution to philosophical debates about truth. From this, the entry moves to discussing pragmatism's broader significance, and it does so by highlighting how pragmatism's emphasis on practical effects relates to cognitive and existential possibilities: Our habits both limit and enable the range of behaviors available to us, but they can also be worked on so as to bring us closer to better possibilities, including possibilities for our own personal development and for making life more meaningful, as well as possibilities for how we approach life in society.

Keywords

American pragmatism · William James · Practical effects · Truth · Development · Habit · Cognition · Meaning · Pluralism

Introduction

In a broad colloquial sense, the term "pragmatism" suggests an attitude of approaching problems without getting bogged down into abstract considerations and "idealistic" expectations: The pragmatic person has a down-to-earth, "realistic"

outlook and does what they can with what they have, knowing that, as the famous aphorism goes, perfect is the enemy of good. This ordinary connotation of “pragmatism” is certainly related to the technical meaning of the term in academic circles, but it is also relevantly different – as much as the “realism” and “idealism” mentioned above differ from their philosophical counterparts. As a school of thought, pragmatism is often described as the quintessential American philosophy, an approach that broke away from both the mainland European and the British traditions to forge a whole new way of addressing philosophical problems, solving some of them, and dissolving others. This entry presents some key themes in pragmatism, beginning with an overview of the pragmatist theory of truth and meaning, and then proceeding to articulating broadly construed “cognitive” and “existential” dimensions of pragmatist thought. Throughout, the entry will emphasize how pragmatist ideas relate to possibility, and, in light of this connection, it will conclude by clarifying how pragmatist philosophy differs from, and can enrich, “pragmatic” thinking in the colloquial sense just described. But, first, a brief historical sketch is in order.

Historical Background

Pragmatism was popularized by William James (1842–1910) in a collection of lectures published as a book in 1907 under the title *Pragmatism, a New Name for Some Old Ways of Thinking*. James credited his friend Charles Sanders Peirce (1839–1914), and in particular Peirce’s 1878 article “How to make our ideas clear,” with having set up the conceptual foundations for pragmatism. Curiously, Peirce would dispute this claim, distancing himself from James’ formulation and calling his own view “pragmaticism” instead (see Peirce 1905). The other canonical figure widely recognized as one of the so-called Classical American Pragmatists is John Dewey (1859–1952), whose 1903 book *Studies in Logical Theory* James cites alongside other articles (Dewey 1906a, b, c, 1907) as contributions to pragmatist thought (see also

► [The Possible in the Life and Work of John Dewey](#)). Besides Peirce and Dewey, James acknowledges Oxford philosopher F. C. S. Schiller (1864–1937; Schiller 1907) as well as members of the “Chicago School” led by Dewey, such as George Herbert Mead (1863–1931; Mead 1903; see also ► [George Herbert Mead](#)), as developing views relevantly similar to his own (James 1904, 1907). Other scholars contemporaneous with James who were linked to pragmatism outside of philosophy included American jurist and associate justice of the United States Supreme Court, Oliver Wendell Holmes Jr. (1872–1929; see Menand 2001), and sociologist and civil rights activist W. E. B Du Bois (1868–1963; see Taylor 2004). Later philosophers influenced to varying degrees by the classical pragmatists include analytic pragmatists and neopragmatists such as C. I. Lewis (1883–1964), Willard van Orman Quine (1908–2000), Hilary Putnam (1926–2016), and Richard Rorty (1931–2007), as well as contemporary philosophers of very diverse orientations such as Robert Brandom, Susan Haack, Cornel West, and Jürgen Habermas, to mention just a few (see Legg and Hookway 2021).

Pragmatism enjoyed great popularity in the period immediately following James’ lectures, in large part due to the amount of criticism its theory of truth attracted (more on this in the next section). This initial notoriety led to relative obscurity, up until pragmatism was rediscovered in mainstream academic philosophy in the past few decades. This history is well documented. Menand’s Pulitzer Prize award-winning 2001 book *The Metaphysical Club: A Story of Ideas in America* offers an engaging account of the historical political, cultural, and intellectual environment in which pragmatism emerged. Different aspects of pragmatism’s later historical development appear in discussions by Schwartz (2012) and Misak (2016), while Shook and Margolis (2006) and Stuhr (2009) each offer rich collections of essays commemorating the centenary of James’ book. Reflecting the more recently renewed interest in pragmatism, a number of general introductions have begun to crop up, including many excellent ones (see Wilshire 2000; Talisse and Aikin 2008; Bacon 2012; Spencer 2020), as well as

anthologies with primary sources from the classic to the contemporary (Menand 1997; Talisse and Aikin 2011). A topic of growing interest is pragmatism's relation to ideas outside philosophy, especially in the natural sciences: On this, see Trevor Pearce's (2020) *Pragmatism's Evolution: Organism and Environment in American Philosophy*, which traces pragmatism's biological roots (and branch and flower and fruit); another recent contribution worth mentioning is Crippen and Schulkin's (2020) *Mind Ecologies: Body, Brain, and World*, which emphasizes the contemporary relevance of pragmatism for the sciences of the mind, and in particular the pragmatist influence on embodied approaches in cognitive science.

Pragmatism, Truth, and Meaning

Since its inception, pragmatism has often been doubly misunderstood in mainstream academic philosophy, on the one hand, as being a theory of truth and not much else, and, on the other hand, as a bad theory at that. This is a mistake. From the start, pragmatism had much more to offer than simply a view on the nature of truth; moreover, what it did have to say about truth was wildly misinterpreted by critics.

In the common misinterpretation, the pragmatist theory of truth is seen as a competitor to the correspondence theory of truth, both of which, in turn, are attempts to answer the question *what is "truth"?* The intuitive answer is that an idea, statement, or belief is true to the extent that it agrees with reality: Truth, in this sense, is usually defined as accurate representation of, or correspondence to, the way the world actually is. In contrast, James famously proposed a view that equated an idea's truth to its expediency or instrumental usefulness:

Any idea upon which we can ride, so to speak; any idea that will carry us prosperously from any one part of our experience to any other part, linking things satisfactorily, working securely, simplifying, saving labor; is true for just so much, true in so far forth, true instrumentally. (James 1907, p. 58)

This pragmatist position is often misconstrued as proposing that *truth is whatever works*, that is, an

idea, statement, or belief is true to the extent that it leads to good consequences – so that it is acceptable to believe falsehoods when the belief is beneficial to the believer and, moreover, that in such cases the falsehood is even to be counted as true! This way of framing the pragmatist view of truth was ridiculed (and rightly so) by many then and ever since, prominently including Bertrand Russell (see Russell's 1908 paper republished under the title "William James's Conception of Truth" in Russell 1910; also Russell 1945; and discussion in, e.g., Putnam 1992). Already in the 1907 book James acknowledges and rejects a version of this misinterpretation and criticism, stating: "Dewey says truth is what gives 'satisfaction.' He is treated as one who believes in calling everything true which, if it were true, would be pleasant" (James 1907, p. 234). The continued popularity of misconceptions like this one led James to publish, 2 years after the first *Pragmatism* book, a follow up titled "*The Meaning of Truth: A Sequel to 'Pragmatism'*" (James 1909). Thankfully, this supposedly pragmatist view is a caricature, and not at all what James and others proposed.

The pragmatist view of truth as put forward by James was not meant to be an alternative to the view that truth is a matter of agreement with reality: Rather, as James explicitly put it, the concern is with clarifying "what may precisely be meant by the term 'agreement,' and what by the term 'reality,' when reality is taken as something for our ideas to agree with" (James 1907, p. 198). And agreement with reality, James proposed, is a very practical matter. In what would become one of the most famous statements of this view James claims: "'The true,' to put it very briefly, is only the expedient in the way of our thinking, just as 'the right' is only the expedient in the way of our behaving" (James 1907, p. 222). Were this the whole story, the critics might have a point. But James further clarifies that, in equating an idea's truth to its expediency, he has in mind a process that unfolds over time rather than merely a static property an idea might have of being instrumentally useful in the here and now. The passage continues with James explaining that he means "expedient in the long run and on the whole of course; for what meets expediently all the

experience in sight won't necessarily meet all farther experiences equally satisfactorily" (ibid.). Over the long run, an idea that at first served as a good guide for action may turn out to be less adequate than expected for dealing with novel problems and situations. When this happens, and we act on an idea but the world pushes back, we discover reasons to revise our way of thinking. This does not mean that the idea was entirely wrong, but just that it is no longer right enough given the novel circumstances.

There are two important aspects to the move James is making here. The first is this. If we see "truth" according to the correspondence view, as a matter of accurately copying or representing reality, then it follows that an idea may be true and at the same time be useless, or that it may be useful but false. This takes for granted a distinction between the true and the good, a distinction that seemed inadequate for James. As he puts it, "truth is one species of good, and not, as is usually supposed, a category distinct from good, and coordinate with it. The true is the name of whatever proves itself to be good in the way of belief, and good, too, for definite, assignable reasons" (James 1907, pp. 75–76). Later on, he elaborates on this idea:

To copy a reality is, indeed, one very important way of agreeing with it, but it is far from being essential. The essential thing is the process of being guided. Any idea that helps us to deal, whether practically or intellectually, with either the reality or its belongings, that doesn't entangle our progress in frustrations, that fits, in fact, and adapts our life to the reality's whole setting, will agree sufficiently to meet the requirement. It will hold true of that reality. (James 1907, p. 213)

In the case mentioned above, of an idea that later turns out to be less useful than it had been at first, we do not have to conclude that it was false: If at first it worked to some extent, that is reason to think that it was true, at least partially; and this is precisely the intuition that pragmatism attempts to ground philosophically by equating truth to expediency – expediency admits of degrees and can be context-specific.

Besides this rejection of the assumption that truth and goodness are distinct and independent characteristics of ideas, a second aspect of the

pragmatist view is worth emphasizing. This is the proposal, already alluded to, that truth is a process rather than a static property. As James puts it, "True ideas are those that we can assimilate, validate, corroborate and verify. False ideas are those that we can not" (James 1907, p. 201), to which he adds:

The truth of an idea is not a stagnant property inherent in it. Truth happens to an idea. It becomes true, is made true by events. Its verity is in fact an event, a process: the process namely of its verifying itself, its verification. Its validity is the process of its validation. (James 1907, p. 201)

As already seen, when James equates truth to expediency, he emphasizes the importance of thinking of expediency in the long run. Now framing truth as a process, we see that it is over time, as our ideas get applied and tested, that they can turn out to be worth believing and acting on. An idea that gets verified and validated is an idea that agrees with reality to the relevant extent and is thereby an idea that gets made true. It is in this sense that James proposed, "Truth for us is simply a collective name for verification-processes," further adding, "Truth is made, just as health, wealth and strength are made, in the course of experience" (James 1907, p. 218). In contrast with thinking, for instance, that an organism is healthy because it contains within itself a distinct positive property of "health," it makes sense to see the label as more simply denoting the organism's having so far withstood the test of experience (e.g., exposure to pathogens and potential accidents without grave consequences). Similarly, James proposes, an idea is not true because it has a static property (e.g., the property of accurately representing reality) but, rather, it is made true – and more or less so – over time, through the test of practical experience.

The pragmatist theory of truth, then, is not meant as an alternative to the view that ideas are true to the extent that they agree with reality: Rather, it is a clarification of this view. An idea agrees with reality when we act on the idea, or act guided by it, and over time the idea proves to work in relevant ways, successfully connecting current experiences with previous ones, and adequately preparing us to move forward and face new

possibilities in the novel experiences to come. And, importantly, none of this was supposed to be novel and revolutionary. In the subtitle of his 1907 book, James described pragmatism as “A New Name For Some Old Ways Of Thinking.” This is, as already noted, partly a nod to Peirce. For Peirce, we attain the greatest clarity in our thinking about some object when we can identify how our thinking relates to practical effects. When it comes to abstract concepts or theoretical constructs in science, for instance, there is only so much we can advance in our understanding by distinguishing these from other concepts and constructs: The clearest understanding of the object in question comes when we can operationalize it in terms of measurable interventions and manipulations along with their practical effects. In this sense, James is elaborating on, and giving a new name to, this older method proposed by Peirce of identifying an idea’s meaning by tracing that idea’s practical effects. But besides recognizing Peirce’s contribution, James’ description of pragmatism as “a new name for some old ways of thinking” can also be seen as a nod to common sense. In emphasizing, on the one hand, that truth is a kind of good (rather than a distinct property independent from expediency) and, on the other, that truth is a process (i.e., of verification), James offers a way of cashing out the philosophical conception of truth in terms that apply to everyday life and that ordinary folk will recognize, even if some philosophers will find dubious: Truth is made when and where the rubber meets the road. Truth *is* agreement with reality, but it is an agreement that is earned through practical tests and over time: In this sense, truth is the name for our ideas’ expediency rather than an independent characteristic that can make ideas useful; in other words, truth is itself a practical good, rather than a source of good and instrumental success.

Pragmatism and Cognitive and Existential Possibility

The importance of experience and practical effects in pragmatist thought goes far beyond these more widely known but narrower

applications in philosophical discussions about truth and meaning, extending also into domains as varied as education, ethics, religion, and politics. And underlying all of these, especially for James, is pragmatism’s psychological dimension.

Although James’ contributions to the development of psychological science precede, by decades, his publications on pragmatism, already in these earlier writings pragmatism is present in spirit even if not yet in name. James’ *Principles of Psychology*, for instance, was published in 1890 but contained material from at least as early as 1878, and it can be read as putting forward a picture of psychological science and mental phenomena that was pragmatist through and through. One dimension of this pragmatist orientation is made evident by the specific way in which James saw psychology as continuous with biological science. In contemporary usage, “biological psychology” tends to have a reductionist flavor, denoting explanations of mind and behavior in terms of physiological mechanisms, especially at the genetic and neural levels (see popular textbooks, e.g., Toates 2007; Garrett 2009; Barnes 2013; Kalat 2015). This strategy of explaining behavior by reference to elementary intra-organismic causes was already popular in James’ time, especially among those developing psychophysical and structuralist approaches (e.g., Wundt and Titchener). In contrast, James’ approach was to understand mind in terms of the relations that organisms bear to their environment: For James, we can only make sense of mental phenomena by understanding their practical conditions and effects, or the life context in which they are situated in the first place (see Heidbreder 1933; Leary 2018). This might seem like a move away from biological explanation, but it was in fact a perspective that James inherited from the distinctly naturalist and ecological orientation in biology developed by Darwin. For Darwin, the diversity of species could not be accounted for solely by intraorganismic processes (e.g., mutations) without reference to interactions among organisms and between organisms and their surroundings, in their real contexts, as they unfold and change over (evolutionary) time. James applies the same explanatory strategy in the domain of psychology.

For him, mind cannot be equated to internal processes nor to inward-looking abilities for abstract reasoning and detached reflection: Rather, he proposes, the defining characteristic of mind is the situated and practical “pursuance of future ends and the choice of means for their attainment” (James 1890, p. 21). Psychological science, then, is founded on a “biological conception” that is also equal parts pragmatist: “man, whatever else he may be, is primarily a practical being, whose mind is given him to aid in adapting him to this world’s life” (James 1899, p. 25).

Besides inspiring a whole new way of doing research in the sciences of the mind (Heft 2001, Crippen and Schulkin 2020; see also ► [Extended Mind](#)), this radically situated, pragmatist biological conception of our mental lives has far-reaching implications for several domains. In his *Talks to Teachers on Psychology* James emphasizes its educational significance, claiming: “Education, in short, cannot be better described than by calling it the organization of acquired habits of conduct and tendencies to behavior” (James 1899, p. 29). Instruction and learning, whether formal or informal, do not amount to the transmission of “knowledge” understood as the memorization of abstract bits of information. And even reframing knowledge as being about embodied habits, although a move in the right direction, can still fall short from what James is proposing. The metaphor of knowledge as something that can be transmitted at all suggests the possibility of an absence of knowledge: That is the learner’s state prior to the transmission. But this does not work for thinking about habits because the absence of habits is impossible. Living creatures, James explains, are “bundles of habits” (James 1890, p. 109): We are bundles of patterned possibilities for behavior or conduct that we have developed due to our plasticity, that is, due to “the possession of a structure weak enough to yield to an influence, but strong enough not to yield all at once” (p. 110). All of us already have all kinds of habits because of how we have been shaped by experience: “We learn all our possibilities by the way of experience” (p. 1099). And that is why the goal of education is not

the *acquisition* of habits, as if we did not have any in the first place, but rather the *organization* of the habits that already make us who we are: Education of one sort or another is the steering or constraining of those habits in this or that direction, toward some practical possibility aimed for. Based on this fundamental principle, James offers a number of recommendations to instructors that resonate with more recent pedagogical trends emphasizing cooperative, active learning. And he also makes recommendations to learners, for instance, warning students against trying to prepare for exams by cramming (James 1890, pp. 623–624). Importantly, these implications of a pragmatist, biological view of our mental lives apply to all development, not only that which happens in formal schooling. As James puts it, “The great thing, then, in all education, is to make our nervous system our ally instead of our enemy,” to which he adds, “For this we must make automatic and habitual, as early as possible, as many useful actions as we can, and guard against the growing into ways that are likely to be disadvantageous to us, as we should guard against the plague” (James 1890, p. 126).

This pragmatist, biological emphasis on habit, or the plasticity of our practical possibilities, also has important moral, spiritual, and political implications. James illustrates this in his essay titled “Is life worth living?” (James 1895). There, he rejects the usual perspectives that go for absolute answers. Instead of categorically affirming the positive worth of all of life or pessimistically denying it, James emphasizes the open-endedness of our existence. His answer is *maybe*: Life may not be worth living, but it can be; ultimately, this depends on the liver, because life “is what we make it” (James 1895, p. 22). Some people living in quite adverse circumstances come to contemplate the possibility of suicide, as James himself did, and he concedes that it could well be that their existence is not worth continuing. But that is not something you could be certain of. For the religiously inclined, faith can be a reasonable and rationally justifiable source of significance (on this, see James’ 1896 essay *The Will to Believe* and his 1902 book *Varieties of Religious*

Experience; see also ► [Spirituality](#)). For others, “mere instinctive curiosity, pugnacity, and honor may make life on a purely naturalistic basis seem worth living from day to day” (1895, p. 15). Most basically, even though there may be many aspects of life we cannot control, what anyone *can* do something about is their attitude and outlook, the way they habitually approach and deal with life’s circumstances. We can, for instance, “conquer undesirable emotional tendencies in ourselves” if only we persevere in “[going] through the outward motions of those contrary dispositions we prefer to cultivate”: Accordingly, James advises, “Smooth the brow, brighten the eye, contract the dorsal rather than the ventral aspect of the frame, and speak in a major key,” and sooner or later “The reward of persistency will infallibly come, in the fading out of the sullenness or depression, and the advent of real cheerfulness and kindness in their stead” (James 1884, p. 198; see also ► [Emotion](#)). There is no guarantee that this will be enough of a consolation in our darkest hour, but it just might work. In the face of uncertainty, the pragmatist stance is that life can be meaningful if we make it so: “possibilities, not finished facts, are the realities that we encounter” (James 1895, p. 23), so “Believe that life *is* worth living, and your belief will help create the fact” (p. 24). As an answer to the question whether life is worth living, this may not seem as satisfying as categorical affirmative or negative answers, James concedes, but it is an honest answer.

Life’s radical open-endedness is thus both constrained and enabled by our habits. The plasticity we exhibit in our ways of encountering life’s circumstances makes it possible for us to develop and learn in certain directions (that is education in the broad sense), and it also empowers us to construct meaning and significance in the pursuit of new practical possibilities. And these considerations at the individual level also bear an important lesson for life together, in society.

We are plastic bundles of habit, which means that our experiences shape us over time in part through the influence from the environment and in part through our resistance to that influence. This transactional process of development opens up

new cognitive possibilities but also closes off others. And this is so not only in the usual contemporary sense of “cognitive” as synonymous with “psychological”: In this sense, dominant since the Cognitive Revolution of the 1950s and 1960s (Miller 2003; Boden 2008), it follows from the picture provided by James that development (i.e., the organizing of certain habits) leads to cognitive specialization in that it gives us mental abilities we did not previously have, but in so doing it also precludes others; our coming to be *this* bundle of habits means that we have not become *that* other bundle of habits. But there is more to it. The term “cognitive” derives from the Latin *cognoscere* (meaning “to know”), and, traditionally, it included an epistemic dimension. This richer sense was the usual one in James’ time, and according to it a cognitive process is not simply a process that goes on inside the mind, but it is a process of coming to know something: In this sense, psychological phenomena such as perception, memory, or language are cognitive to the extent that they play an epistemic role, contributing to our achieving knowledge of the world. And in this sense, development opens up possibilities for knowing and understanding aspects of reality while also limiting other ways of knowledge and/or limiting our knowledge of reality to some aspects rather than others.

As practical beings, James explains, each of us “is bound to feel intensely the importance of his own duties and the significance of the situations that call these forth” (1899, p. 229–230). Our particular embodied, situated existence makes certain aspects of the world more salient, and some possibilities more compelling or repulsive, than others. This unavoidably unique perspective we have on the world has as its counterpart “a certain blindness,” as James puts it, namely “the blindness with which we all are afflicted in regard to the feelings of creatures and people different from ourselves” (1899, p. 229). For James, coming to understand this fundamental character of our embodied cognitive (i.e., psychological but also epistemic) existence motivates adopting a pluralist attitude and embracing a politics of tolerance. We may be unable to understand why others act in certain ways, but we can appreciate

the fact that, like us, they are approaching the world from a unique point of view from which those actions appear as compelling, valuable, and perhaps even necessary. For James, “the truth is too great for any one actual mind (...) to know the whole of it” and “The facts and worths of life need many cognizers to take them in. There is no point of view absolutely public and universal” (James 1899, p. v). And so, beyond simply informing how we think about education or the meaning of our own life as individuals, the pragmatist picture inspires seeing others as similarly embodied bundles of habits who have developed in particular ways that might have endowed them with cognitive and existential possibilities we just cannot know or understand very well. Pragmatist thought and its emphasis on practical effects, then, has a very clear practical consequence: “The practical consequence of such a philosophy is the well-known democratic respect for the sacredness of individuality” and “the outward tolerance of whatever is not itself intolerant” (James 1899, p. v).

Conclusion

As seen at the beginning of this entry, “pragmatism” in a colloquial sense suggests a down-to-earth and perhaps even narrow-minded attitude of favoring what is most feasible over other potentially better but less practical possibilities. The previous sections showed that pragmatism in the philosophical sense *is* indeed concerned with emphasizing practical effects in many different domains. Importantly, however, the emphasis that pragmatism (in the narrow, technical sense) places on the practical is intimately connected to its emphasis on exploration of, and openness to, the wide range of possibilities available to us. In a personal letter he wrote in 1906, James makes the following observation:

I have no doubt whatever that most people live, whether physically, intellectually or morally, in a very restricted circle of their potential being. They make use of a very small portion of their possible consciousness, and of their soul’s resources in

general, much like a man who, out of his whole bodily organism, should get into a habit of using and moving only his little finger. (James 1906/1920, pp. 253–254)

The specific context of this claim is interesting. James’ correspondent, W. Lutoslawski, had tried to convince James (then in his mid-sixties) to take up yoga, to which James responded in this letter that he had tried some breathing exercises but had found them unpleasant and unhelpful. In the passage immediately preceding the quote above, James notes that, based on Lutoslawski’s description of its effects, yoga might just be “a methodical way of waking up deeper levels of will power than are habitually used, and thereby increasing the individual’s vital tone and energy” (James 1906/1920, p. 253).

We often fail to notice or act on the full range of possibilities available to us. James’ observation makes sense in light of his pragmatist description of humans as bundles of habits and practical beings who are both empowered and limited by their plasticity. But pragmatism also motivates working to expand our boundaries and explore the unknown. And this is something that the specific context of James’ observation – namely his experimenting with bodily practices and disciplines – makes quite vivid. More than a theory of truth, pragmatism encompasses a view of the nature of education, the significance of life, and democratic coexistence, and underlying all of these, a view of what it means to be human. In these different domains, pragmatism emphasizes practical effects, but it does so to encourage openness to new possibilities rather than the narrow-minded closing off to them in favor of whatever seems most practical and convenient. This is in line with James’ description of pragmatism as being ultimately simply a *method* or “an attitude of orientation”: “The attitude of looking away from first things, principles, ‘categories,’ supposed necessities; and of looking towards last things, fruits, consequences, facts” (James 1907, pp. 54–55). This attitude helps us tackle deep metaphysical and epistemological problems, for instance, pushing forward our

understanding of the nature of truth and meaning. But it is very practical as well. Pragmatism invites us to think differently about life in its most mundane aspects and to enrich it by exploring new possibilities for ourselves and for society: It just might work out.

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Prayer

► Spirituality

Prisons

Carolina De La Torre Ugarte
Independent Scholar/Consultant, Geneva,
Switzerland

Abstract

A prison is a securitized building housing for convicted persons for long amounts of time with permission by law to punish individuals inside for their crimes and to deter others from offending. Though practices of incarceration and confinement can be traced back to ancient times, the historical antecedents of the modern-day prison began less than 400 years ago in the seventeenth century. Aside from common facilities in most prisons such as sleeping quarters, cooking/eating areas, health services, and recreational spaces, prisons are defined by their lawful deprivation of individuals' liberty and their obligation to provide basic care. Adherence to the minimum standards of custody and care, outlined in the Mandela Rules, is not always achieved and failure to do so often escapes national or international reproach. This is due in part to perceptions of prison as an embodied state of exception in which a certain level of disregard for rights is socially acceptable. Though people in detention are labeled as dangerous, the majority of the prison population is incarcerated for nonviolent offenses stemming from addiction, poverty, and other social problems. From the standpoint of Appadurai's conceptualization of the possible as a hopeful endeavor toward a more equitable society, reflections on prison and the possible explore reforms, alternative sanctions, and the abolitionist question of how else can society carry out justice without a prison.

Keywords

Prison · Detention · Incarceration · Penal reform · Criminal justice reform · Prison abolition

Introduction

A prison is a securitized building housing for convicted persons for long amounts of time with permission by law to punish individuals inside for their crimes and to deter others from offending. For sociologist Erving Goffman, prisons fall into the category of what he dubbed a *total institution*: “A total institution may be defined as a place of residence and work where a large number of like-situated individuals, cut off from the wider society for an appreciable period of time, together lead an enclosed, formally administered round of life” (Goffman 1961, p. xiii). Due the regimented nature of prison life by prison management, he goes on to add that individuals residing within total institutions “all their essential needs will have to be planned for” (Goffman 1961, p. 10). Though total institutions include other closed facilities such as nursing homes or mental health institutions, the term provides a point of departure for the defining characteristics of a prison. Other forms of detention sometimes coterminous with prisons include immigration detention, juvenile detention, security detention, administrative detention, and military detention.

The etymology of the word prison derives from the Latin *prehendere* “to take,” in line with the concept of apprehending someone and taking them into one's custody or under their care. It should be noted that in English, prison and jail are separate buildings in which the former is reserved for convicted individuals, or are found guilty of a crime, and a jail houses individuals waiting for trial. Outside of the English-speaking world, prison can refer to both prison and jail (like in France).

History

Though practices of incarceration and confinement can be traced back to ancient times, activities

such as taking prisoners of war, jailing debtors, or indenturing servants were not reflective of the present-day form of a modern prison. According to historical and penal scholars, the historical antecedents of the modern-day prison are estimated to have begun in the seventeenth century. Before the modern-day prison, punishment for crimes took a more immediate form. People were locked in jails for short periods of time either to pay back debts or to await trial. If found guilty, the sentence usually resulted in some form of public corporal punishment or, in more serious cases, very painful death. Philosopher and historian Michel Foucault famously opens his book *Discipline and Punish* with an account of the grueling drawing and quartering of Robert-François Damiens in 1757 for the crime of attempted regicide of King Louis XV (Foucault 1975). This account is notable for two reasons. First, it illustrates the violence and horror of punishment methods of the time. Second, as the final recorded account of drawing and quartering in France, it harkens the end of punishment as public spectacle and the beginning of *The Birth of the Prison*, the subtitle of Foucault's book.

It was during the French revolution and the penning of concepts like rights in the Declaration of the Rights of Man and of the Citizen where voices of dissent began to emerge, denouncing the depravity and inhumanity of punishment as public spectacle. With growing dissemination of the ideas of human rights, the object of punishment shifted from the body to the soul. Prisons started being used to lock bodies away for longer amounts of time, sparing their lives and limbs in exchange for discipline and penitence (origins of the term penitentiary). Discipline was achieved through regimented schedules and hard labor, training individuals to follow lifestyles in line with societal norms and values. Foucault argued that discipline and punishment of the body and soul grew into a major form of social control and management of undesirable populations, rather than a project of rehabilitation for the sake of the rights of those inside.

The first modern prisons within the USA in the early 1800s were deemed complete failures for some of the same issues that exist today. Due to

quick overcrowding, the prisons were up against the rapid spread of disease, riots, and escapes as well as severe mental break down among the individuals inside (Rubin 2018). This led to the expansion of more prisons, bigger prisons, to address the large number of arrests. Some groups advocated for the closure of such horrible establishments, but the project for a perfect prison became the focus of attention, rather than questioning the endeavor altogether.

Prisons today continue to focus on retributive justice, or an approach to justice focused solely on the punishment and suffering of the offending party. A successful carriage of justice takes the form of a guilty verdict and a sentence with little regard for how that sentence will affect the convicted person, their family, the victims, the staff, or the community at large. After centuries of isolating the body to bend the soul or spirit into submission, the detrimental effects of a prison sentence on the mind, body, and soul of all involved are well documented and undeniable. But what could be done instead? This entry is an introductory exploration of prisons and the possible – a possible that looks to build a more just and equitable society, even in the midst of harmful actions. One could certainly reflect on the darkest and most cruel possibilities for a prison, but that would be best reserved as an entry of its own.

It should be noted that the Western conceptualization of the prison was exported to many non-Western countries through colonialism and other points of contact, but its evolution over time changed within each context. For more on the history of prisons in Africa, Asia, and Latin America (Dikötter and Brown 2018).

Defining Characteristics: Custody and Care in Exception

The defining characteristic of prison is the deprivation of an individual's liberty in custody. Custody refers to the restriction of someone's activities and the suspension of certain rights, most commonly due to one's alleged, certain, or eventual commitment of a criminal act.

A crime is an action that is considered as causing harm or against social norms under the law (local or national) and can be punished under the law. Criminalization has two definitions, one focused on the criminalization of the act, and the other on the criminalization of a person or group. The first is the process of making *an action or object* illegal and punishable by law. What is deemed criminal or illicit depends on each context. For example, in some US states, the recreational consumption of certain amounts of marijuana is legal, while in others this action is a criminal offense punishable by a prison sentence. The second definition refers to the process of deeming *a person or group* criminal by making their activities illegal. For example, the criminalization of opium in the USA did not begin with the prohibition of the substance itself. The first laws against opium outlawed the smoking of the substance, a practice particular to Chinese immigrants at the time.

The same practice can also be seen in the sentence disparity between crack and cocaine. As part of the US “War on Drugs,” the Anti-Drug Abuse Act of 1986 introduced mandatory minimum sentencing for the use and possession of illicit substances. However, crack cocaine which was the cheaper substance was met with harsher punishment. While possession of 5 g of crack cocaine would result in a 5-year sentence without parole, it would take 500 g of powder cocaine to be given the exact same sentence (Britannica 2020). This 100:1 disparity led to a massive spike in the incarceration of low-income communities predominately comprised of African Americans and other people of color. Panic from the media also called for increased policing in these areas, ignoring the detrimental effects incarceration has on individuals suffering from addiction. Even though cocaine is prevalent in White and affluent circles as well, people of color and individuals in low-income areas were and continue to be criminalized at much higher rates. The Fair Sentencing Act passed in 2010 eventually reduced the ratio to 18:1, but many experts question the legitimacy of the gap altogether.

Regardless of where a person has been detained, the deprivation of liberty itself looks

very similar across contexts. The pertinent detaining authority takes custody of the person in question, who is assigned to remain in a closed structure and confined to a limited space. That space could range from a small solitary cell in a police station, a shared dormitory in a juvenile facility, or an entire village-like compound in prison. The rule remains the same – one cannot step outside of the established boundary set by prison authorities. Common facilities include sleeping quarters, areas for eating/cooking, health services, bathrooms, and recreational spaces, each of which can be individual or communal.

Accompanying the custodial characteristic of prisons is a second characteristic – a counterpart of custody: care. Duty of care is a legal concept that obliges a certain individual or entity to offer certain protections and provisions for people they are responsible for, or people under their care. Political scientist Joan Tronto conceptualizes care in its most basic form as the acknowledgment and provision of fundamental goods and services to those who cannot fulfill their own needs (Tronto 1993). Once a legal authority has taken someone into custody, they have also taken away that person’s ability to meet their basic needs – food, water, shelter, clothing, health care, etc. Prison authorities therefore have an obligation to meet their duty of care to people in their detention facilities by protecting the lives and meeting the needs of those under their charge. This is not to say that providing basic care is done in a caring or benevolent way necessarily.

One might ask why define prisons by custody and care and not by punishment or rehabilitation. The main reason for this conceptualization lies in legal obligations and measurability. Punishment and rehabilitation are extremely subjective goals, and there is no widespread consensus on what successful punishment or rehabilitation look like. Prisons are also not liable for failing to punish or rehabilitate someone enough, or at all. Yet, minimal levels of custody and care are mandated by laws and social norms. Adherence to these standards may not always be met, but failure to do so can leave an institution liable to legal and social ramifications on the local, national, and international stage. This conceptualization grasps the

core of carceral action and represents the interests of society and the individual.

In terms of authorities implicated in penal custody and care, one must consider the following: lawmakers define the law which defines crimes and sometimes establishes sentencing laws; law enforcement arrests people allegedly committing acts against the law; the courts decide a person's innocence or guilt as well as their sentence when not predetermined by law; and agencies such as prisons, probation offices, and the like are responsible for carrying out sentences. Acknowledging these roles and institutions illustrates the complexity of prison ecosystems and the challenges to change them. Even so, it also offers multiple potential points of analysis for rethinking what is possible within these systems.

The primary document that delineates the minimal standards for custody and care is the Mandela Rules, or the UN Standard Minimum Rules for the Treatment of Prisoners. Named after the first Black South African president, Nelson Mandela, who himself was incarcerated for 27 years, these rules "set out what is generally accepted as being good principles and practice in the treatment of prisoners and prison management" (Mandela Rules, 7). It covers rules on issues of living conditions, food, access to health care, disciplinary sanctions, and others to ensure humane treatment behind prison walls. Other UN rules protecting specific populations and situations in detention include: "The Bangkok Rules" on the treatment of women, "The Beijing Rules" on the treatment of adolescents, and "The Tokyo Rules" on non-custodial measures. The Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment (CAT) is another guiding document that monitoring bodies can use to investigate and document possible torture or ill-treatment in detention.

Why the need for minimum standard rules? Because prisons and those within often fall within a space of exception, Carl Schmitt's state of exception, later elaborated by Giorgio Agamben, refers to a government or ruling authority's ability to act outside the law and suspend rights during exceptional circumstances such as a natural disaster or security threats (Agamben 2005).

Incarceration is an embodied state of exception in that a certain lack of adherence to minimum standards of custody and care by government authorities is socially acceptable and can be overlooked. Additionally, the stigma that follows upon release continues to deprive individuals access to rights and services. In many countries, the presence of an arrest or criminal record bars one's access to housing, education, jobs, welfare programs, and other services. This is not to say that there are not cases in which such temporary or permanent restrictions may be necessary for a victim's or the public's safety, but most cases do not fall into this category. These barriers, and the stress from navigating these barriers, can be the very reason someone (re)turns to illegal activities. Pushing people in detention further down the priority list is the historically low allocation of funds to prison budgets. Prisons are expensive endeavors. Trying to provide adequate food and living conditions alone costs a lot of money, not to mention educational programs, job trainings, and health care. Unfortunately, many prisons rarely receive enough funds to do so due to strong public opinion against the investment in people they consider dangerous or undeserving. As much as one tries to meet the most minimum standards, the resources do not meet the high demand.

State of Prisons Today

Demographics

Exploring what could be possible in prison requires a first look into the current reality. Before delving into the numbers, one must first understand the difficulty of taking stock of the situation – aka the challenges of gathering accurate data on populations. There are three main challenges. First, the number of people in prisons per country changes every day due to new entries and releases. Second, countries that collect the counts receive information from multiple prisons, each with its own methods of collection. Third, there is no overarching obligation for prisons to provide population numbers. And four, it is not always clear who should collect the information. This leads to varying numbers across agencies and

organizations. For guidelines on gathering criminal justice statistics (United Nations 2003). Even with these challenges, experts understand these statistics as only one piece of the puzzle that must be supplemented with further study. The following section provides an overview of the most recent statistics available as well as current trends from the last 10 years.

According to the most recent data collected in 2021 by Penal Reform International and the UN Office on Drugs and Crime, there are an estimated over 11 million people behind bars, an 8% increase since 2010. Of that, over three million are awaiting trial. In at least 14 countries, the pretrial population is as high as 70%. Though percentages differ across countries, most people in detention are serving sentences for nonviolent offenses. Women make up the minority of the prison population, ranging between 2% and 9% across countries. Though they are a small group, the total number of women worldwide has increased by 17% since 2010, and prisons are often unprepared to accommodate women's needs: menstruation, pregnancy, health disparities, and more women than men are the sole caretakers of children and ailing loved ones.

Clear disparities exist between race and class in criminal justice systems. Prison often affects the most marginalized of groups in society with the least amount of political power. People of color, people in poverty, foreigners, and people suffering from mental health challenges are more likely to be perceived as dangerous, more likely to be policed, and must often rely on overworked public defenders who rarely have the resources to provide the best legal defense – if the right to legal defense is provided at all. Challenges to navigate criminal justice systems vary by country, but the struggle to do so with little resources is a common occurrence.

Trends

Though incarceration trends vary by each country and context, three in particular stand out due to their repercussions on people in detention's well-being as well as their prevalence across the globe: privatization, aging, and crimmigration. One of the biggest concerns regarding privatization is

the fact that private entities, by their nature, prioritize profits. Historically, they have failed to adhere to minimum standards in order to save money. However, the discussion goes beyond the growth of private prisons as entities. Countries that once condemned the privatization of prisons – and continue to still do so – have since begun to enter contracts with private companies for services such as communications, transportation, electronic monitoring, and culinary services. The often compromised quality and delivery of such privatized services negatively impacts the welfare of people inside.

The increase in age of people in detention is also cause for concern. Due in part to the handing down of longer sentences and life sentences, prisons must accommodate older populations with increasing health problems. With age, they are developing chronic diseases such as cancers, autoimmune diseases, and dementia. The toll of prison life has stripped away at their immune systems and physical limitations, demanding assistance in going to the bathroom, specialized diets, and life-saving medications. Furthermore, in some cases, the people in prison who rely on loved ones for financial and emotional support are outliving them. Prisons were not built to cater to these growing needs, and many institutions struggle to adapt and find funding to do so.

The final trend, crimmigration, coined by Juliet Stumpf, lies at the intersection of criminal and immigration law. Crimmigration refers to the criminalization of the act of immigrating as well as the behaviors of immigrant populations in order to monitor, detain, and/or deport them. It can impact immigrants in both documented and undocumented statuses as well as asylum seekers. Driving without a license is a common offense that can result in the involvement of both criminal and immigration proceedings. More and more sectors such as education, work, and housing require proof of residence, shutting individuals out from basic services for survival. Once in the criminal justice system, immigrants are often subject to a double penalty – upon completion of their penal sentence, they are eligible for deportation. Though not new, this trend continues to pick up in popularity.

Additional Groups Impacted by Prison

Vital to discussions on prisons and the possible is the role of victims, families, and staff. Each group is impacted by incarceration in their own ways, and they are often forgotten in both criminal proceedings and reform initiatives.

From arrest to release, victims and their families are often left out of criminal justice proceedings. Current forms of justice provide little consideration for the disappointment that comes with a nonguilty verdict or the eventual release of the person that caused them harm. They are also limited to retributive practices and rarely have the option to participate in victim-offender mediations – a well-lauded restorative justice practice which allows the injured party to hold the injuring party accountable for their actions in a safe and structured environment. Victims' and their families' sense of justice, safety, and peace should play a larger role in the justice system.

Families of people in detention often carry immense emotional, social, and financial burdens in regards to their loved one's incarceration. Daily interactions are reduced to short weekly phone calls. Grandparents become caregivers to their grandchildren in old age. Plans for weddings or children or vacations are put on pause. Extra savings go toward court bills, health bills, and provisions not given by the prison. Loved ones may not be behind bars, but they too suffer the effects of the sentence.

Due in part to small budgets, prisons are often understaffed with overworked and underpaid employees. Some do not receive proper training to carry out their duties effectively and within international guidelines. Some struggle to make ends meet. They too can get sick during outbreaks, be affected by the violence and suffering they witness at work, and they too would benefit from changes to the criminal justice system.

Though a more detailed discussion is beyond the scope of this entry, their inclusion is paramount.

Prisons and the Possible

As this encyclopedia demonstrates, the possible is defined and conceptualized in many different

ways. This entry on prisons and the possible examines possibility from the standpoint of Appadurai's ethics of possibility, the "ways of thinking, feeling, and acting that increase the horizons of hope, that expand the field of the imagination, that produce greater equity...and that widen the field of informed, creative, and critical citizenship" (Appadurai 2013). The following section explores scholars', experts', and advocates' humane and hopeful visions of the possible: prison reform, penal reform, alternatives, and abolition. Except for abolition, these terms are used interchangeably and can refer to each other. The conceptualizations provided here are more for clarity and structure at each level of action.

As previously discussed, the law, law enforcement, the courts, and prisons are implicated in the custody and care of people in prison. This provides various points of departure for the possible at each articulation within and between each of these entities. Visions of the possible in prisons start from the inside. Prison reform refers to changes made within the institution of the prison. Efforts to better adhere to the Mandela Rules would be considered prison reforms – expanding living space, providing nutritional meals, increasing time spent outdoors, etc. A commonly cited prison reform is the prohibition or limited use of solitary confinement – the placement of an individual in an isolated cell, with no meaningful human contact. The person in confinement might have contact with a guard multiple times a day for food delivery, but the interaction is devoid of any social exchange. As a disciplinary measure, solitary's intended purpose is to separate someone who is a danger or in danger and to subdue or calm someone. However, studies show that it does not achieve the stated purpose, and that the detrimental effects on a person's mental and physical health are severe. Though the UN considers any duration passed 15 days as torture, some individuals spend years of their sentence completely alone. If confinement during the Covid-19 pandemic has taught us anything, it is that we need meaningful human interactions.

Another important initiative is the implementation of syringe exchange programs. Given the prevalence of clandestine drug use in prisons,

health professionals have taken lessons learned from the HIV/AIDS epidemics to work with authorities to limit the spread of blood-borne diseases such as HIV/AIDS, malaria, and syphilis. Several studies show that these programs are effective at disease prevention and do not lead to increases in drug use inside the prisons (Stöver and Nelles 2003). Though these findings are promising, more research is needed to improve implementation across contexts. Aside from solitary confinement and the introduction of syringe exchange programs, other prison reforms include introducing education and job skills programs, improvements in nutrition, and training prison staff in nonviolent de-escalation strategies.

Penal or criminal justice reform encompasses any proposed changes to practices, policies, or laws within the criminal justice system. Since the law dictates much of the responsibilities of authorities within the criminal justice system, many reforms focus on changes to the law. One such reform is decriminalization of drug use. Decriminalization is the legalization of a substance or behavior once prohibited under the law. Where a behavior is decriminalized, so too is the person or group partaking in it. At current, people who use illicit substances are criminalized and sent to prison where (1) drug use is prevalent and (2) resources are not always available for drug treatment programs. Rather than further isolate those who suffer from addiction, the goal is to acknowledge and treat addiction as a health issue. Portugal has seen great success with this shift, but that success is thanks to the implementation of comprehensive reforms. Decriminalization went hand in hand with health reforms so that when law enforcement and health and social services came across people using drugs, they could refer individuals to more appropriate rehabilitation programs than a prison could provide. More research is needed to understand any unintended consequences of the reforms as well as possible paths forward for other countries to adapt the laws and implement the practices.

Alternatives to prison refer to any measure within the criminal justice system that can be

used to deter criminal activity and avoid a custodial sentence in prison. Alternatives fall under the jurisdiction of the courts, in conjunction with laws that allow these measures. Some of the noncustodial measures listed in the Tokyo Rules include verbal sanctions, monetary penalties, restitution to the victim or a compensation order, probation and judicial supervision, community service, semi-detention (residents are allowed to leave during the day under certain conditions), and house arrest. A particularly popular yet complex example is electronic monitoring. Electronic monitoring involves attaching a bracelet to an individual's body (usually the ankle) in order to track their whereabouts. The two main types of technologies used are radio frequency (RF) and global positioning satellite (GPS). RF monitors someone's presence or absence in a given perimeter and GPS provides exact locations and trajectories of someone's whereabouts, the former being more common than the latter. This practice has grown in popularity among countries looking to address prison overcrowding. On the one hand, wearing a bracelet allows individuals some normalcy to their everyday lives – continuation of work or school, parenting, and caregiving of loved ones – and avoids the detrimental psychological effects of incarceration such as depression, trauma, and self-harm. Electronic monitoring in lieu of a prison sentence can also decrease recidivism. However, some reformers caution that the overuse of electronic monitoring has resulted in net-widening, or an unnecessary expansion of individuals under penal surveillance, usually of marginalized groups, and in recent decades foreigners. This concern does not diminish the utility of and flexibility electronic monitoring offers as an alternative, but it certainly begs proponents to track and mitigate the unintended consequences of its use.

Although definitions vary among abolitionists, abolition is an ideal that calls for the replacement of prisons with systems and programs that address the root causes of crime, poverty, mental health, addiction, trauma, inequality, marginalization, and other societal challenges. Notable leaders of

the abolition movement include Ruth Wilson Gilmore and Angela Davis (see Davis 2011; Gilmore 2022; Kushner 2019). Abolition does not refer to the complete immediate elimination of prisons. It suggests that the frequency and manner in which prisons are used to address societal issues could be reduced and replaced by other means. It favors transformative justice, a form of justice in which not only is the offender held accountable for their actions, but that their actions are understood in a larger context in which systems and norms such as racism, sexism, capitalism, and the like must be held accountable as well. This does not excuse the harm caused, but grapples with the circumstances that facilitated its occurrence. Abolition asks what justice without a prison would look like and how society can mitigate harm in the short and long term in the process.

At the forefront of abolitionist initiatives is the redistribution of public resources. Calls to defund the police are asking for a partial reallocation of resources from police precincts to social services better equipped to address calls related to mental health, poverty, and addiction. For many, this is not a complete discounting of law enforcement as a public service, but police cannot be the only source of assistance or support because they are not trained to handle such a wide range of crises. Some of the social services envisioned do not yet exist and need building from the ground up. How will services be contacted? How will community needs be identified and updated? What training is needed to address community needs? While abolition does examine the viability of preexisting models, it opens a creative space for rethinking new systems and exploring the possible in new and hopeful ways.

Conclusion

As one reflects on the future of prisons and the possible forms they or their replacements may take, initiatives must be formulated comprehensively. Decriminalization of drug use is only

effective when paired with a strong public health care system. Justice is neither restorative nor transformative if it does not include victims, families, and communities. Reducing the number of prisons will leave employees within penal systems without an income. Facing these challenges in creative ways can provide paths forward in pursuance of a more just and equitable society.

Disclaimer The aforementioned reflects only the opinions of the author. None of the aforementioned reflects any opinions of any organizations mentioned or otherwise.

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Probabilistic Thinking

Laura Macchi, Laura Caravona, Niccolò Aimo
and Veronica Cucchiari
University of Milano-Bicocca, Milan, Italy

Abstract

This entry starts by defining probability, followed by a review of the historical context of probabilistic thinking. It continues with a brief commentary on experimental classical research on probabilistic thinking, heuristics, and biases research program. It then focuses on the main critical perspectives to this paradigm, the frequentist and the pragmatic approaches, which have reinterpreted the so-called cognitive illusions. These perspectives lead to a further exploration of the concept of probabilistic thinking, which opens the way toward a more genuinely psychological and comprehensive conception of “possible” and “uncertain.”

Keywords

Probabilistic thinking · Heuristics and biases ·
Pragmatic approaches · Verbal probabilities ·
Uncertainty and possible

Definition and History of Probabilistic Thinking

Etymologically, the word *probability* comes from the Latin *probabilitas –atis*, expressing credibility and verisimilitude, and from *proba-ae*, in its joint meanings of evidence and commendable. Probability in the sense of the condition of a fact or an event that may occur, or, if there is more than one possible fact or event, the fact or event that can most reasonably be expected to occur. In this sense, it represents the degree (or even the measurement) of the possibility of an event occurring.

In general, from the psychological point of view, the *capacity for judging* is “the power or ability to decide on the basis of evidence” (*Webster’s Third New International Dictionary*). In other terms, probabilistic judgments are based on

tangible data, which act as indications for intangible events or circumstances; we do, however, also produce these judgments in the absence of data (Macchi et al. 1999).

Historical records show that there was no real concept of probability in Europe before the mid-seventeenth century, although the use of dice and other randomizing objects was commonplace. Hacking presents a philosophical critique of early ideas about probability, induction, and statistical inference and the growth of this new family of ideas in the fifteenth, sixteenth, and seventeenth centuries. He invokes a wide intellectual framework involving the development of science, economics, and the theology of the periods, describing the transformations that made it possible for probability concepts to emerge (see Hacking 1975).

Generally speaking, the notion of probability itself gives rise to the problem of the meaning of the actual concept of probability. Both Carnap (1945) and Russell (1948) insisted on the existence of two different and irreducible concepts of probability: Carnap named them *inductive probability* (or *degree of confirmation*) and *statistical probability* (or *relative frequency*), while Russell used the terms *degree of credibility* and *mathematical probability*. The first concept of probability can be characterized as the degree of possibility of a single event occurring (events or facts or states of things or circumstances: “Tomorrow it will probably rain”). The second, fundamental concept of probability is *collective* or *statistical* probability, which deals with classes, species, or quality of events as opposed to individual events. If for n observations the event in question took place m times, m/n is the relative frequency of this class of events: relative, as applicable to n observations. Therefore, statistical probability does not concern individual events, but classes and sequences of events (Popper 1957). We will find these different acceptations of meaning in the various psychological theories of probabilistic thinking, which, consequently, differ in their formulation of probabilistic problems and their interpretation of the experimental evidence that emerges.

In particular, the mathematical acceptance of the concept of probability is to be found in the

study of subjective probability in the Bayesian paradigm introduced to psychology by Edward's famous article of 1954, in which he proposed, for the first time, a fully articulated model of optimal performance under uncertainty for comparing human judgments. The matching of human judgments to normative models was to become one of the major paradigms of research on judgment under uncertainty.

It can be said that the systematic study of probabilistic reasoning and decision-making processes started to merge as an independent discipline in the 1960s. Those were the years in which psychology was differentiating itself from philosophy and carving out a place among the sciences; to this end, to comply with requirements of "scientificity," it integrated the speculative approach adopted by philosophy with the experimental approach, basing this on logic and the theory of probability. This is the formal point of view used by the psychology of thought to evaluate human reasoning, judgment, decisions, thus creating a paradigm which translated in natural language problems from normative theories. Since the early studies in the 1960s, the predominating vision has been substantially rationalistic, from the logistic theory of deductive reasoning to probabilistic reasoning up to Piaget's theory of epistemological genetics on cognitive development. In the beginning, in fact, the first studies offered a vision of probabilistic thought of statistically naïve subjects that complied with the principles of theoretic decision-making and inferential models from the theory of probability (Edwards 1968). A seminal review of studies on adult statistical inference by Peterson and Beach, titled "Man as an intuitive statistician," confirmed this general approach and arrived at the conclusion that "probability theory and statistics can be used as the basis for psychological models that integrate and account for human performance in a wide range of inferential tasks" (1967, p. 29).

Later, two types of factors modified the general orientation of research in this sector. In the field of psychology, systematic errors in responses to logicist theories were identified (see, for example, the Wason's selection tasks 1966). In the field of economics, on the other hand, the physicist and

economist Allais (1953) demonstrated a decision-making paradox regarding the normative theory, revealing its failure as a descriptive model for decision-making. The search for new descriptive models of behavior led to the study of intuitive statistical reasoning modalities, i.e., the way statistically naïve people reason and evaluate the probability of an event in tasks more closely resembling everyday situations (Tversky and Kahneman 1974; Slovic 1972; Janis and Mann 1977; Nisbett and Ross 1980).

It should be noted that from the very beginning the psychology of reasoning was faced with the question of its specific tasks and competences compared to logic first and the theory of probability some decades later, recognizing effective thinking, or how people really think, as its particular sphere. However, this distinction was formulated within a conceptual framework characterized by references to logic or the theory of probability as a psychological model of correct thinking. And so psychology started by auto-imposing a heavy limitation: the assumption of an inevitably depsychologized pre-constituted norm, borrowed from a tradition, however, to which it opposed its novelty and independence (Mosconi 1998).

It is worth noting that the development of formal logic, in fact, became a gradual process of "depsychologization" of logical language and of disambiguating simplification compared with natural language, intentionally pursued and programmatically declared by modern logic. The psychology of thought has inherited this tradition with a counterpoint: the dilemma of errors, the frequency, transversality, and generality of which were considered to be indicative of the structural limitations of the human mind. This tendency to make mistakes translated into the concept of *bias*, indicating a systematic deviation from the norm inherent to the human cognitive system. From this point on, experimental research on reasoning focused on the problem of human error, the incapacity to grasp the deep logical structure (for a review on this issue see Frankish and Evans 2009).

In brief, whereas researchers in the 1960s concluded that probability updating is "conservatively" proportional to normative predictions, in

the 1970s research suggested that people are incapable of following normative rules (Bayes’s rule). Therefore, psychology of deductive and probabilistic thought had to adopt a dualistic vision as a theoretical framework in an attempt to explain both the human capacity for abstraction and correct reasoning and this tendency to the so-called cognitive illusions. As a result, from the 1970s the principal theories of thought were characterized by a dualistic vision that attributes error to thought processes that are different to those that guarantee correct reasoning. “The fundamental computational bias in human cognition would be the tendency toward automatic contextualization of problem (System 1), [...] while System 2’s more controlled processes would decontextualize [...] and would not be dominated by the goal of attributing intentionality nor the search for conversational relevance” (Stanovich and West 2000, p. 659). What has, however, been lost is the complexity of reality, which was seen as an element of interference, clouding the general structure that underlies reasoning; whereas thought is of necessity contextualized, drenched in content, implicit presuppositions, beliefs, intentions, and deals with reality in all its complexity.

The emphasis on the error of probabilistic reasoning, the so-called *biases*, has only been overcome in this area in the last decades. In fact, a process of critical revision has now been implemented, which has permitted taking into consideration the actual representation that people have of assessments and evaluation tasks. As a result, a different interpretation is now possible of answers that are traditionally considered erroneous, and also, in more general terms, of the concept of rationality.

**Research on Probabilistic Thinking:
From *Homo Statisticus* to *Homo Loquens***

Homo Statisticus. A first group of studies focused on tasks that required a revision of judgment in the light of new information. These revisions are compared with optimal revisions calculated by using Bayes’ theorem (Table 1).

The “Book bag-and-poker chip” experimental paradigm has been adopted by numerous authors

Probabilistic Thinking, Table 1 Bayes’ theorem

$p(H E) = p(H) \times p(E H)/p(E)$	
$p(H E)$	Posterior probability, i.e., the probability that hypothesis H is true if evidence E is given
$p(H)$	Base rate or prior probability of H, i.e., the probability that hypothesis H is true
$p(E H)$	Likelihood, i.e., the probability that evidence E is given if hypothesis H is true
$p(E)$	Prior probability of E, i.e., the probability that evidence E will be given whether or not hypothesis H is true. $p(E) = p(E H) \times p(H) + p(E not H) \times p(not H)$

in several variants. In a typical version of the experiment (Edwards 1968), participants were shown two “book bags,” and told that they were filled with red and blue poker chips, the colors being differently distributed between the bags. One bag contained 70% red chips and 30% blue chips, the other 70% blue chips and 30% red chips. The experimenter selected one of the two bags at random (prior probability 0.50) and then extracted a sequential succession of chips from the bag, e.g., 8 red and 4 blue chips. After each chip was extracted from the selected bag, the participants were asked to judge the probability that it was of the predominant color. Most subjects answered in the right direction (0.75), even if, in accordance with Bayes’ theorem, the precise posterior probability would be 0.97.

These results showed a phenomenon called “conservatism” (Edwards and Phillips 1964; Peterson et al. 1965). As their information was updated, the participants revised their posterior probability estimates in the direction of the normative model (Bayes’ theorem). However, their revision was too small. In general terms, humans were therefore defined as *conservative Bayesians*.¹

Homo Heuristicus. How do people reason and make decisions in a world of uncertainty? The

¹As in most Book bag-and-poker chip problems, the starting point of subjective estimation is specifically set by the prior probability procedure, but the point at which participants decide to stop revising their estimate, according to us, seems in most cases not too far from likelihood.

Probabilistic Thinking, Table 2 Biases and heuristics

Biases	Heuristics
<i>Base-rate fallacy</i>	<i>Representativeness, Causal schemas</i>
<i>Conjunction fallacy</i>	<i>Representativeness, Causal schemas</i>
<i>Gambler's fallacy</i>	<i>Representativeness</i>
<i>Overestimation of sample size</i>	<i>Availability</i>
<i>Anchoring effect</i>	<i>Anchoring and adjustment</i>

discrepancy between theory and reality marked the beginning of the exploration of cognitive heuristics that may well characterize our reasoning in everyday life; what Simon called the “study of *bounded rationality*” (1956). Two main approaches, the “Heuristics and Biases program” and the “Frequentist” approach, provided different answers to the open question that Simon posed.

Over almost a decade, there has been a radical change in the representation of humans from intuitive statisticians to more defective versions (Tversky and Kahneman 1973). The search for new descriptive models of behavior has led to the adoption of an experimental paradigm which used tasks closer to everyday life, but far from the previous contexts that typically elicited the calculation of mathematical probability. In this perspective, heuristics were considered cognitive shortcuts that simplify the complexity of assessing the probability of an event but mainly lead to serious and systematic errors, i.e., biases (“Heuristics and Biases” Program, Kahneman et al. 1982) (Table 2).

One of the most studied biases concerns the failure to take prior probability into account when judging the probability of conditional events, called *base-rate fallacy*, a paradigmatic example of which is the *Lawyers and Engineers* problem (Kahneman and Tversky 1973). The participants were divided into two groups, after which they were presented with short personality descriptions drawn at random from 100 descriptions of lawyers and engineers. While one group was told that the descriptions were of 30 engineers and 70 lawyers, the other was told the descriptions were in the

opposite proportion. This information was followed by five personality descriptions that varied in their degree of representativeness of the engineer/lawyer stereotype. The task was to establish the probability that the person described was indeed, i.e., an engineer. The mean of the responses given by the participants in the two conditions did not turn out to be significantly different, indicating that base rate was not considered. According to the authors, the subjects based their responses only on the typicality of the description in relation to the category of engineers (following a *representativeness heuristics*), almost completely disregarding the number of engineers in the sample (*prior probability or base rate*). This evidence seems to demonstrate the weakness of the “intuitive statistician” thesis, highlighting a behavior which is in no way Bayesian.

Anyway, it is interesting to note the degree to which the structure of the *Lawyers and Engineers*’ problem resembles that of the Book bag-and-poker chips (Edwards 1968): e.g., the 30/70 composition of the reference group and the sample of predominating red chips “8 red and 4 blue,” which corresponds somewhat to the representative description. Despite the apparent similarity of the structure of the two tasks, there is a substantial shift of context from the purely statistical to real life, perhaps determining a different acceptance of the concept of probability (from mathematical probability to plausibility, verisimilitude, credibility).

The *heuristic of representativeness* is also invoked by Tversky and Kahneman (1983) to explain another type of error, the *conjunction fallacy*, which has been exhaustively illustrated with the well-known “*Linda*” problem. Participants were presented with the description of Linda, a young, outspoken, and very bright woman. She majored in philosophy, and as a student, she was deeply concerned with issues of discrimination and social justice. The task was to evaluate the probability that, among other things, Linda was “active in a feminist movement,” a “bank teller,” or a “bank teller and active in a feminist movement.” The great majority of the participants considered, erroneously, more

probable that Linda was a “bank teller and active in a feminist movement” rather than just a “bank teller” because of the presence of the adjective “feminist” which is representative of Linda. However, the probability of the conjunction of two events will always be lower than the probability of each of the two constituents.

A strong reaction to this perspective arrived from a different approach to the study of probabilistic reasoning in the second half of the 1990s, in accordance with an ecological perspective inspired by Simon, to whom anyway also Tversky and Kahneman were inspired. According to Gigerenzer and Hoffrage (1995), the difference in prediction between correct probabilistic inference and incorrect intuitive inference is attributable to the *percentage* format with which data are mainly presented, which is comprehensible only to a small group of experts. In the absence of specific training, the human mind, having evolved in harmony with a given environment, would have the ability to make naturally probabilistic estimates only from data in frequentist format, i.e., the natural format of observation of a sequence of events, and not by percentages (the format typically adopted by Tversky and Kahneman), which are fairly recent forms of representing uncertainty (Goldstein and Gigerenzer 2002).

Consider, for instance, a doctor who has to calculate the probability that a person with a given symptom is suffering from a specific disease. Based on his experience, the physician knows that he has seen 1000 people, 10 of whom had the disease. Of those 10, 8 had the symptom; of the 990 not afflicted with the disease, 95 also had the symptom as well. According to the computation of favorable and possible cases: $8 / 8 + 95 = 8$ out of 103. Note that, as clearly shown in the example, there is no need to pay attention to the base rate (10 out of 1000), since this information is already in the hit frequency, and then it is quite difficult to consider this reasoning as a form of Bayesian one.

Furthermore, if the ecological perspective considers only frequencies as a “natural” format, it is also true that the use of percentages expresses and solves a need for cognitive economy, for saving cognitive resources, which is at the basis of the

functioning of inductive thinking: the need to generalize from the particular. Use of the percentages allows a property or characteristic to be extended from a limited set of cases, individuals, or observations (e.g., 10 out of 1000 40-year-old women) to the general population from which the individuals are drawn (i.e., 1% of 40-year-old women). The advantage for our cognitive system is unquestionable: a saving of cognitive resources and an increase in knowledge, inherent in the possibility of being able to make inferences and predictions even on samples to which there is no direct access, as long as they are part of the same population to which the percentage refers.

Homo Loquens. The pragmatic perspective offers a different explanation for biases in probabilistic reasoning, which goes beyond biasing heuristics and frequentist explanations (Macchi 2000; Macchi and Mosconi 1998). This approach is characterized by taking into account the effect of the communicative intent on reasoning, decision making, and problem-solving (Bagassi and Macchi 2016; Hilton 1995; Macchi and Bagassi 2012, 2015; Macchi and Zulato 2021; Mosconi 1990; Politzer and Macchi 2005; Sher and McKenzie 2006; Sperber et al. 1995). Its core assumption is that the representation of a problem stems from what the problem communicates and how, i.e., not just what is literally said but also what is implied and then effectively communicated (i.e., conversational implicatures, Grice 1975). Indeed, communication should provide an adequate understanding of information to promote reasoning. This is particularly relevant for the understanding of statistical and probabilistic data that lay people are able to understand only if it is communicated appropriately (Koehler and Macchi 2004). In other words, the transmission of objective information is a necessary but insufficient condition, since if the speaker/experimenter does not respect the requirements of natural language, their communication may lead to a misleading interpretation.

In the specific area of probabilistic reasoning, considering for instance the base-rate neglect, pragmatic analysis has revealed that the so-called bias does not seem due to the difficulty implicit in Bayesian reasoning but seems to be

caused by a specific formulation of the likelihood (Macchi 1995). The supposed tendency to ignore the base rate in favor of the likelihood would result from a distorted transmission of information induced by how the text of the problem is structured. The transmission modality of the conditional relationships between the various pieces of information constituting the problem would be inadequate because it operates a sort of literal translation of the formal concept into a different language, the natural language, which can be insufficient or misleading.

The well-known experimental *medical diagnoses* paradigm, introduced by Casscells et al. (1978) and Eddy (1982), is an excellent example of this. It is often summarized in the literature as follows:

The probability of breast cancer is 1% for women at age 40 who participate in routine screening. If a woman has breast cancer, the probability is 80% that she will get a positive mammography. If a woman does not have breast cancer, the probability is 9.6% that she will also get a positive mammography. A woman in this age group had a positive mammography in a routine screening. What is the probability that she actually has breast cancer?

Ninety-five out of 100 physicians to whom the problem was submitted gave an estimate between 70% and 80%, which almost coincides with the percentage of true positives, while the Bayesian answer is much lower (7%). The heuristics and biases approach considered this phenomenon as emblematic of the difficulties in Bayesian reasoning; the frequentist approach translated the same problem into natural frequencies to show the effect of the frequentist format, as already said. The pragmatic approach could succeed in providing a coherent response for the emerged contrasting evidence.

Take this specific sentence in the original text: “If a woman has breast cancer, the probability is 80% that she will get a positive mammography.”

This formulation, though quite natural in common language, could not be able to convey the underlying statistical meaning, thus leading to confusion between conditional probabilities: (i) likelihood, i.e., women with breast cancer who have a positive mammography, and (ii) a

posteriori probability, i.e., women with a positive mammography who have breast cancer.

An adequate and more understandable representation of the sentence can be obtained if it is reformulated to read closer to the actual meaning of the information, thus helping to avoid the very common misunderstanding illustrated above:

80% of women with breast cancer have a positive mammography.

This type of formulation has been called *partitive* (Macchi 1995, 2000), as it indicates the set to which the data refers, defining the proportion or subset of the population (women with breast cancer) of which the data represents a part (women with breast cancer who have a positive mammography) and thus relativizing the numerical content (80% of 1%). When such a formulation is adopted, either in terms of relative frequencies expressed in percentages, or in terms of natural frequencies, the independence of the base rate from the hit rate is clear and the relationships between the data can be correctly used. Thus, when adopting the partitive formulation, even without neutralizing the heuristic principles involved or adopting a *frequentist format*, there is a substantial decrease in the occurrence of the fallacy.

According to this view, the improvement in the results following the use of frequentist formulation could be attributed to the presence of this particular information format, the *partitive formulation*, rather than to a more ecological format. This formulation, renamed by Barbey and Sloman (2007) as *nested sets*, can be considered as the linguistic equivalent of a graphical set representation. The partitive formulation is a way of translating a specific language into a natural language, in a task structured partly with a common language and partly with a specialized language. The pragmatic approach, which considers language and thought to be closely interconnected, implies and entails the unavoidable reintroduction of the psychological aspects eliminated from technical-specialist communication by the natural language adopted in the problems studied.

Probabilistic Thinking and the Possible

Among the more recent contributions, another possible key for understanding the inconsistency across research traditions has been provided by Lejarraga and Hertwig (2021). They argue that the core of the problem lies in the changes to the types of experimental paradigms. Starting from Kahneman and Tversky's studies, not only has the content of the problem been brought closer to real-life situations with respect to previous experiments, but there has also been a shift from an experience-based approach (participants directly interact with the environment and sample information sequentially) to a descriptive-based approach (a symbolic representation of the situation is provided, informing the participants about the hypothetical events). The authors claim that first-hand experience can promote appropriate statistical inferences in probabilistic thinking while description does not.

According to the authors, this approach would also be able to clarify why, although natural frequencies are used in descriptive paradigms, they can reflect some of the underlying experience, leading to a better performance. Anyway, what this perspective has still not managed to explain is the effectiveness of using the partitive formulation, as it fits into a descriptive paradigm in which the percentage format can also be used successfully.

All things considered, from a communicative perspective the historical evolution of the approach to probabilistic thinking it seems plausible to consider the hypothesis of a sort of progressive detachment from a mathematical acceptance of probability to a conception of possibility as credibility and verosimilitude. While the Book bags-and-poker chips problem explicitly brings to mind mathematical-statistical inference contexts, the problems formulated after the 1970s that tend to use description of personalities, medical diagnosis and similar scenarios, seem to have switched the conception of the probable to what can be plausible or likely, which may distort and fail to make clear real intention of the experimenters, even to the point of obscuring it (Mosconi and Macchi 2001).

This issue has been explored by revisiting the classic studies conducted on probabilistic reasoning with people trained in logic and mathematics, inviting further speculation about the type of cognitive capabilities of those diversely gifted people who solved the same tasks without such training. A first critical question emerges from an analysis of the results obtained by Tversky and Kahneman (1983) working with *informed* and even *sophisticated* subjects in the field of statistics. Paradoxically, when attempting to solve the well-known *Linda problem*, the majority of these subjects committed the so-called conjunction fallacy. Undoubtedly the fact that people trained in decoupling failed to recognize a relative elementary logical rule such as the inclusion rule, raises questions that need to be addressed. How is it possible that subjects trained in logic or statistics had such difficulty with these tasks? In the absence of an appropriate translation from the logical-mathematical to a natural language code, or of an adequate signaling of the code used, it is only to be expected that the understanding of the task is based on discursive-conversational rules the subject is accustomed to using, that do not necessarily correspond to the logical-mathematical codes (Bagassi and Macchi 2016).

It could justifiably be inferred that this process of interpretation of mathematical probability vs. plausibility and possibility judgment can be strictly linked to how the data in the task is formulated. This is best shown by the evidence in the field of the "Exemplar-cuing theory" (Koehler and Macchi 2004), which states that people attach more weight to low-probabilities when the formulation of the data can easily generate examples in their minds. A recent example has been provided by Aimò and Macchi (in preparation) in a study focusing on the perception of slight probabilities related to the phenomenon of lottery gambling. The aim was to understand if different formulations of the winning chances could influence the probability-assessment, increasing or reducing the willingness to pay in gambling. Three formats were taken into account: (a) *frequency* format "the chance of winning is equal to 1 out of 6 million," (b) *single-case* percentage format "the chance of

winning is equal to 0,000017%,” (c) *narrative* format “imagine a continuous line of lottery tickets connecting Milan to Rome: the chance of winning is equal to stopping in any spot of the road and picking the only winning-ticket.”

Comparing frequencies and percentages, results showed that the first induced a higher willingness to pay. When the hit-rate is expressed as a number equal or greater than 1 (e.g., 1 out of 6 million), it elicits the mental representation of the winning chance, inducing a higher possibility judgment than smaller hit-rates (e.g., 0.000017%), which appears less possible. These results are in line with the Exemplar-cuing theory: the same event can be judged more (or less) possible depending on how the data are formulated, in this case, “1” is exemplar-cuing, while “0.000017” is not. Interestingly, results showed that the narrative format induced the highest levels of willingness to pay. The authors proposed two possible hypotheses to explain the effect of the narrative formulation: (1) it increases the perception of the winning chances through exemplar-cues in the form of mental representations and (2) it stimulates involvement and active participation in the task through gamification. In fact, the narrative format is the one which seems more distant from probabilistic language and at the same time closer to everyday discourse.

The translation of probabilities into common language and everyday scenarios, of which narrative is one possible example, has been well studied in the format of verbal probabilities. Verbal probabilities are verbal expressions of probabilities that provide a vague estimate of the likelihood of an event (Brun and Teigen 1988; Teigen and Brun 1997, 2000, 2003), such as “a chance,” “very likely,” and “plausible.”

An established body of research has focused on the possibility of translating verbal probabilities into numerical ones and vice versa (e.g., Reagan et al. 1989), showing that it is possible to translate words such as “very likely” into estimates, but at the same time, these estimates are so different among people that they can represent a potential communication problem (Teigen and Brun 2003). A probability approaching certainty should be defined as “highly probable” or “almost certain,”

probabilities around 50% as “uncertain” (Teigen and Brun 2000). In actual fact, verbal probabilities can also be used to convey a meaning that may deviate from the mathematical datum, depending on the *speaker's intention* (the choice of term has pragmatic implications) and prior expectations. Furthermore, verbal probabilities are more *directionally accurate* than numerical probabilities, because they are formulated in order to directly refer to the potential presence or absence of a given event. Hohle and Teigen (2018) focused on the effects of the so-called “single-bound probabilities” combined with a directional preposition, such as “over 30%” or “under 50%.” These formulations, which are common in everyday life, convey more information than simple numerical data. If the expression “over 50%” is used, it would be logically correct to assume that the exact value could be anywhere between 50% and 100%; however, it is interpreted as a value roughly located around 60%. Again the logical acceptance of probability could diverge from the psychological one, with broad implications for the representation of the possibility of events.

Summary

In everyday life, uncertainty is a condition with which people must deal. The expression of this uncertainty is the probability. Probabilistic thinking and how people talk about the probability of events shape what they do in the present (and will do in the future). Studying how people reason, understand, and use probabilities is fascinating and relevant. Several approaches over the years have proposed opposing views about human probabilistic reasoning. Researchers in the 1960s concluded that humans are intuitive statisticians, able to evaluate probability in the Bayesian way. From the 1970s, with new studies recreating real-life contexts, the view changed completely, considering a defective version of humans, guided by heuristics rather than normative thinkers. Several paradigms tried to explain this discrepancy. As discussed, the reference to an extra-psychological normative criterion (logic and the theory of probability) in evaluating human reasoning remained

unchanged for a long time. Only in recent decades, the study of probabilistic reasoning focused on the actual representations that people have of probabilistic tasks. Studying probabilistic reasoning means dealing with a complex reality: how people take into account probability in real life is, in fact, subject to the influence of context, expectations, prior knowledge, speaker's intentions, and so on. From a communicative perspective, it seems possible to consider the hypothesis of a progressive shift from the mathematical meaning of probability towards a concept of possibility as credibility and verisimilitude.

Cross-References

- [Discourse](#)
- [Possibility Thinking](#)

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Problem Finding

Roni Reiter-Palmon and Sanaa Ahmed
Department of Psychology, University of
Nebraska at Omaha, Omaha, NE, USA

Abstract

Problem finding or problem construction is commonly seen as the first step in creative problem-solving. Problem construction consists of two main aspects. The first aspect focuses on the identification of problems in the environment. The second aspect of problem construction focuses on the structure and description of a problem in order to then create a solution. The problem construction process most often occurs quickly and automatically; however, actively engaging in problem construction has been linked to an increase in creativity. Additionally, problem construction has been associated with creativity across a wide range of domains. There are a variety of factors that may affect problem construction, such as expertise and personality variables, as well as the amount of time or information provided to the problem-solver. While problem construction tends to be automatic, training

in problem construction or instructions to actively engage in problem construction increase creativity. Engaging in the problem construction process takes time and requires effort on the part of the problem-solver. Problem construction provides a road map for the possible. Goals identified in the problem construction process relate to what is possible, which constraints relate to what is impossible.

Keywords

Problem finding · Problem definition · Problem construction · Creative problem-solving

What Is Problem Finding?

When studying the realm of creativity, a common avenue of research is the cognitive processes associated with creative problem-solving and creative thinking (see ► [“Creative Problem-Solving”](#)). Within many of these cognitive process models, problem finding or construction is frequently listed as the first step (e.g., Guilford 1967; Mumford et al. 1991). There are many variations of the term problem construction, including problem definition, problem discovery, problem identification, problem framing, and problem finding. While the underlying definition stays fairly consistent, each term has its own specifications; in order to prevent potential confusion, this entry will use the term problem construction. Problem finding consists of two key facets, as pointed out by Reiter-Palmon and Robinson (2009). The first focuses on problem identification and recognizing opportunities in the environment even when those have not been explicitly presented to the individual solving the problem. The second facet focuses on structuring and describing the problem in a way that provides the individual with a basis to develop a solution.

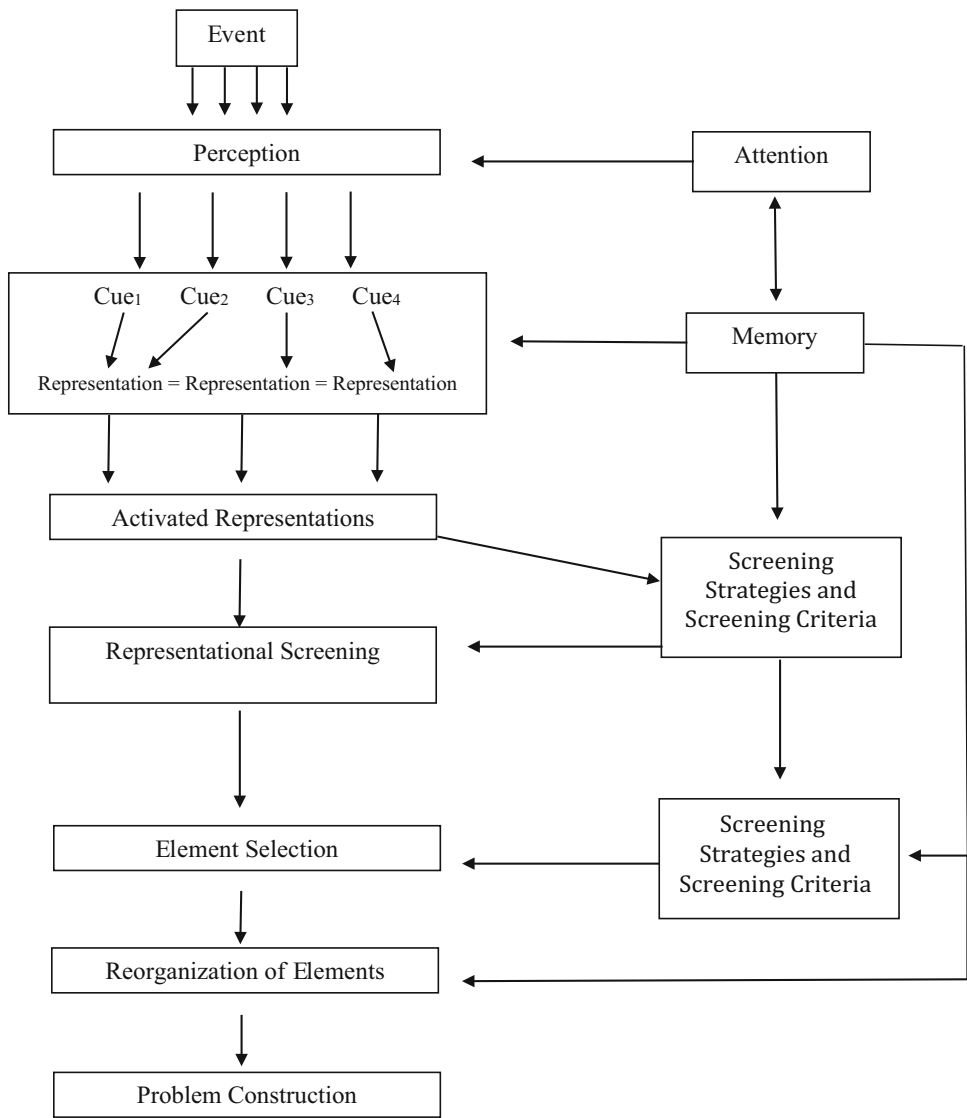
Problem construction is particularly important when problems are ill-defined. This is because a main aspect of ill-defined problems is that problems are not clear or presented, rather they need to be identified. Further, an ill-defined

problem lacks structure and definition, thereby creating a good environment to engage in problem construction.

The Problem Construction Process

A vast majority of problem-solving models list problem construction as the first step in the process. Despite this, there are not many models of the actual problem construction process. Initial models suggested two phases of problem construction, starting with problem recognition followed by problem definition (Basadur 1995; Guilford 1967). A more comprehensive model detailing the process of problem construction was proposed by Mumford et al. (1994); see Fig. 1. In this model, problem construction begins with an event which in turn must be perceived. The first step in the model proposed by Mumford et al. (1994) corresponds to one aspect of problem construction, namely, identifying opportunities in the environment or problem anticipation. The cues observed in the environment trigger problem representations, which are knowledge frameworks or problem representations, and contain four types of information: the goals or outcomes associated with the problem-solving effort, information required to describe and solve the problem, procedures and operations executed in order to solve the problem, and any limits or hindrances restricting the problem-solving effort. Problem representations are developed based on past problem-solving efforts (Holyoak 1984).

If a particular problem representation has been linked previously to a specific cue, it will be activated again upon observation of that cue (Mumford et al. 1994). However, ill-defined problems typically have a variety of cues that are more intricate. These cues can potentially be linked to several different problem representations, meaning multiple problem representations may be activated. Fewer problem representations and even a single problem representation may be activated, the more well-defined, simple, or structured the problem is. If an individual is presented with a problem that is similar to a



Problem Finding, Fig. 1 Problem construction model. (From Mumford et al. 1994)

problem he or she previously solved, the problem representation linked to the original problem-solving effort will be activated. If multiple problem representations are activated, the problem-solver may take components of the different problem representations and combine them into a novel problem representation. The outcome of this novel problem representation may be a more creative definition of the problem and by extension would lead to a more creative solution.

The problem construction process described by Mumford et al. (1994) has a number of important implications. First, problem construction will occur quickly or automatically in the majority of cases. This includes routine problems, problems that have been solved before, and problems that resemble previously solved problems. An individual will only actively engage in problem construction if a problem varies from previously confronted problems or if it activates multiple problem representations. Second, the

problem construction process contains both convergent and divergent aspects. Incorporating elements of several problem representations into a novel representation is a convergent process. Conversely, the activation of multiple problem representations is a divergent process (Baer 1988; Reiter-Palmon et al. 1997). It is also important to note that knowledge plays a key role in the problem construction process as well. What problem representations are activated is based on similarities between observed cues in the environment and prior problem representations (Mumford et al. 1994). Making connections of this manner indicates that some knowledge is essential to successful problem construction.

Importance of Problem Construction

Problem construction has been repeatedly associated with creativity in a variety of domains. The seminal study on problem construction was conducted by Getzels and Csikszentmihalyi (1975). In this study, students of art were asked to paint a still life painting. They were provided with a large number of objects to choose from and were observed throughout the entire process, from selecting and composing the objects all the way to the completion of the painting. The paintings were then assessed for aesthetic value and originality by instructors. Problem construction behaviors, such as number of unusual objects selected, how long it took the student to arrange the objects, and so on, were evaluated. It was found that problem construction predicted the aesthetic quality and originality of the resulting painting.

Furthermore, problem construction measures were foretelling of artist success measured at two different points in time, 7 and 18 years later.

Other research suggests that problem construction is predictive of creative accomplishments as well as creative problem-solving in day-to-day problems. More importantly, problem construction is predictive of creativity above and beyond other predictors, including intelligence and divergent thinking. Additional work in this area has proposed that individuals higher in creativity

spend an increased amount of time and effort on problem construction than individuals lower in creativity (Okuda et al. 1991; Rostan 1997; Reiter-Palmon et al. 1998). More recently, a meta-analysis revealed that, compared to other cognitive processes, problem construction had the strongest effect on creativity (Ma 2009). As such it appears that creative individuals tend to engage in more effective problem construction.

Factors That Affect Problem Construction

The literature on problem construction demonstrates that it is integral to the creative problem-solving process. It is important to understand what factors influence problem construction and by extension may have an effect on creativity. A great deal of research has shown that active engagement in problem construction increases the creativity of both the process and the solution to the problem (Redmond et al. 1993; Reiter-Palmon et al. 1997). More recently, perspective taking during the problem construction process has been demonstrated to enhance the process (Vernon and Hocking 2016). Additionally, a meta-analysis on creativity training revealed that training in problem construction had an improved effect on creativity, so much so that it is one of the best methods for improving creativity (Scott et al. 2004).

Prior studies have indicated that problem construction ability was associated with more novel problem construction and more creative solutions (Reiter-Palmon et al. 1998; Runco and Okuda 1988). Other studies have indicated that individuals with higher levels of creativity, including experts, spend more time on the problem construction phase. However, the relationship between expertise and problem construction is not clear. Compared to beginners, experts typically have more problem representations that can be used to help define the problem and spend more time on problem definition as a whole. Experts may evaluate novel problems as similar to problems they have dealt with in the past, and thus may have a main problem

representation. It is also possible that experts are able to actively identify potential constraints, thereby leading them to discover particularly creative solutions.

There are a variety of individual difference variables that have been associated with problem construction. Personality variables linked to problem construction include openness, flexibility, tolerance for ambiguity, and creative self-efficacy. Additionally, individuals who view themselves as creative tend to engage in effective problem construction. It is likely that individuals who are more motivated to engage in problem construction will do so because actively engaging in problem construction is a time-consuming and arduous activity. In addition to individual difference variables, contextual variables also influence the problem construction process. The degree of consistency of information in a problem also influences problem construction. Although well-defined problems tend to contain consistent information, ill-defined problems typically include a wider variety of cues that may be inconsistent with one another. Conflicting cues and inconsistent information in problems have been linked to higher levels of creativity and originality of the solutions. This may be due to the effect the contradictory information has on the variety of problem representations activated, which are then integrated into a new problem representation (Mumford et al. 1994; Reiter-Palmon et al. 1997).

A recent meta-analysis proposed that the connection between the problem construction process and creativity could be dependent on the measure of creativity used as well as the domain (Abdulla et al. 2018). This is consistent with previous findings demonstrating that domain and task effects have a variety of outcomes regarding creativity.

Problem Construction and the Possible

Problem construction, at its core, is a process by which the creator identifies the possible. As noted previously, problem construction is determined by

problem representations, and an important aspect of the problem representation is the goal of the problem-solving effort. As a result, inherent in the problem construction process, is the identification of the possible, through the identification of a desired goal. In addition, the problem representation includes constraints or restrictions. These are specific actions or outcomes that cannot be achieved. As such, these represent the impossible. However, it is important to note a critical caveat. While restrictions and constraints indeed represent those actions that cannot be taken, and those goals that cannot be achieved, in many cases that is not necessarily the case. These restrictions may be a result of underlying assumptions that have not been verified, or based on past problem representations, and not applicable to the current problem in the current situation.

One important aspect of creative problem-solving is indeed the identification and question of such assumptions. When individuals attempt to solve problems when they assume these restrictions, which do not really exist, they are in fact restricting the options that they have to solve the problem – they are restricting the possible. In questioning assumptions, making implicit assumptions more explicit is a key to constructing problems more creatively and achieving creative solutions. By questioning these assumptions, the creator will be able to identify true restrictions and remove those that do not truly apply, therefore increasing the potential and possibilities. However, it is important to note that constraints can be facilitative of creativity (Stokes 2014). In fact, under some circumstances, when there are not too many constraints, and when the constraints are not too severe, constraints have been found to be beneficial. Further, constraints can directly indicate that creativity is needed, not necessarily to solve the problem, but to overcome the constraints imposed. In that respect, constraints themselves may open certain possibilities, even as they close off others.

Experimental manipulation to engage in problem construction also creates conditions that call participants to think about the possible. The typical instructions following Baer's (1988) approach, ask participants to "restate the problem

in as many ways as you can, starting with How can I or How can we". These instructions require participants to think about goal states – which are the desired goal(s) for solving the problem at hand. As ill-defined problems tend to have multiple possible goals, this typically results in multiple restatements targeting different goals. The purpose of this manipulation is indeed to facilitate the generation of multiple goals, which in turn would facilitate the activation of multiple problem representations. The activation of multiple problem representations would hopefully result in a new problem representation, which would result in a more creative solution. In this case, the purpose of the manipulation is to increase the possibilities. That said, while in many cases the effect of these instructions is clear, and results in improved creativity, that is not always the case. Recent research suggests that the quality of the active engagement in the problem construction process is important. Generating multiple restatements that are conflicting (as opposed to complimentary) and acting on those when solving the problem is critical for creativity. That is, while it is possible to think about multiple goals, individuals may focus on only a subset of the goals generated, because it is easier. When goals are conflicting, the number of potential solutions that would effectively solve the problem is reduced (Butler et al. 2003). Further, because solving for conflicting goals is more difficult, individuals may focus on identifying an easier solution even if it ignores all the potential goals. As such, possibilities both increase and decrease at the same time. The number of possible effective solutions for multiple and conflicting goals is smaller (therefore showing a decrease). However, addressing multiple goals increases the possible – as multiple goals are taken into account and not ignored.

As this section suggests, the role of problem construction is important for creativity, but also for understanding and determining what is possible and what is not. Problem construction through the use of goals and constraints in the problem representation creates a place for the possible.

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Problem Redefinition

Roni Reiter-Palmon¹ and Vignesh R. Murugavel²

¹Department of Psychology, University of Nebraska at Omaha, Omaha, USA

²University of Nebraska at Omaha, Omaha, USA

Abstract

This entry examines the process of problem redefinition. Problem definition is discussed as it fits into the larger creative problem-solving process. Specifically, the distinctions between problem redefinition and problem definition are detailed. A formal definition of the problem redefinition process is formed from these qualifications. Theoretical and empirical works on redefining problems to produce creative solutions are examined to better understand the utility of the redefinition process. Literature from organizational science, social and cognitive psychology, and design thinking is reviewed to elucidate the problem redefinition process. Both individual-level and group-level problem redefinition processes are considered. A brief discussion of research on goal change is provided to further describe how and why problem redefinition occurs. Finally, the

role of the possible is discussed to capture the essence of problem redefinition.

Keywords

Creative problem solving · Creative process · Problem definition · Problem redefinition

What Is Problem Definition?

Rhodes (1967) has suggested that research on creativity falls into one of four different categories, known as the 4P model of creativity. According to Rhodes, creativity can be understood by the Product, or the outcome, the Person, which involves personality and motivation, Process, which focuses on the cognition or thinking processes associated with creativity, and Press, or the environment. Multiple models of creative cognition or creative problem solving exist (e.g., Dewey 1910; Guilford 1967; Mumford et al. 1991; Newell and Simon 1972; Sternberg 1986). It is noteworthy that all these models include problem definition or a similar construct (e.g., problem findings, problem construction, problem identification, problem discovery). An important aspect of this first step of creative problem solving is problem definition, that is, structuring the problem, defining what the problem is and is not, and defining the problem relative to a goal state (Reiter-Palmon and Robinson 2009). The characterization of the problem definition process makes it clear that it includes an evaluation of a desired goal state, an existing or potential gap, and envisioning the possibilities that exist. These possibilities include not only the desired goal state, but also the various approaches to reach the desired goal state from the current state of affairs (Basadur et al. 2000). The possible routes to a creative solution, product, or outcomes are considered in the problem construction process.

What Is Problem Redefinition?

Problem definition is seen as the first step in creative problem solving, followed by other processes such as idea generation and idea evaluation. However, the creative problem-solving does

not always occur in a fixed progression of processes (Mumford et al. 1991). Each of the core creative processes incorporates outcomes from earlier processes. For example, idea generation uses problem structures formed in problem definition to develop a set of possible ideas (Reiter-Palmon and Hullsiek 2010). Idea evaluation uses criteria identified in problem definition and idea sets formed idea generation to identify the best idea for implementation (Mumford et al. 2002). Although these core processes form a continuum, creative problem-solving is not linear. Individuals can cycle back to earlier processes when they encounter difficulties in any process. For instance, if the idea generation process is not successful or idea evaluation reveals that none of the ideas generated can be implemented, earlier processes may be revisited. When this occurs, problem-solvers may return to the original problem definition. Under these conditions, the problem-solver is then likely to re-evaluate their previous definition of the problem and determine if that problem definition still applies or should be revised. Problem redefinition occurs when the original problem definition has been changed to address the deficiencies or difficulties encountered in the creative problem-solving effort.

Model of Problem Definition and Redefinition

Problem definition and problem redefinition are particularly important when problems are ambiguous and ill-defined. When problems are well-defined, the problem is delineated for the problem-solver. There may be no need to define the problem, identify criteria and goals, and form a structure to generate possible solutions. The problem-solver can proceed to generating ideas. When problems are ill-defined, it is not clear what the problem is, or the problem can be viewed in multiple ways. Ill-defined problems compel problem-solvers to engage in problem definition to produce creative solutions (Reiter-Palmon 2018). In a similar vein, unforeseen difficulties in the creative problem-solving process may compel problem-solvers to redefine the problem.

A problem construction model proposed by Mumford et al. (1994) can be particularly helpful in understanding factors that influence problem definition and redefinition (see entry for Problem Finding). The model proposes that individuals must attend and perceive cues in the environment, which indicate that there is a problem to be solved. These cues also provide information on the nature of the problem, and therefore dictate how it should be defined. Environmental cues in turn trigger problem representations. Problem representations are memory structures stored in long-term memory and are based on past problem-solving efforts (Holyoak 1984). As a result, past experiences have a significant effect on how problems are defined and constructed. When multiple problem representations are activated and a single problem representation cannot be used, the problem solver must find a way to create a new problem representation. New representations include a mix of the elements from the activated problem representations. These compound representations will likely result in a more creative way to define the problem (for a review of the full model see Mumford et al. 1994).

While a theoretical model of problem construction and problem definition exists, understanding when and under what conditions individuals choose to redefine the problem is more limited. In a model of creative processes, Mumford et al. (1991) outlined that a return to problem definition results from a process of solution monitoring. During monitoring a problem-solver seeks indicators of the implementation success of an idea. According to Mumford and colleagues, monitoring can lead to a reconsideration of the approach to an idea's implementation or can lead to a return to problem definition. The authors propose that the action of returning to previous processes depends on the solver's skill in evaluating indicators, self-awareness, and the type and validity of feedback from the implementation environment.

Although Mumford et al. (1991) decreed that redefining a problem is a noteworthy part of the creative process, their model does not fully detail how or why redefinition occurs. Design thinking provides some insight into this redefinition process. One important tenet of design thinking is

that of prototyping (Kelley et al. 2001). A prototype allows the designer to try out the solution to the problem quickly, and identify shortcomings. This in turn will lead to revisions in the creative problem-solving process. While in many cases the prototype will suggest that a solution requires modifications or a new solution is needed, there are cases where prototyping can point to deficiencies in how the problem was originally defined, and therefore lead to problem redefinition (Kelley et al. 2001; Reiter-Palmon and Paulus 2020).

There is some limited empirical work on problem redefinition. Work by Medeiros et al. (2018) focused on the role of introducing constraints before various processes such as problem definition, idea generation, and idea evaluation. Constraints show a complex relationship with creativity, sometimes hindering creativity, while at other times facilitating creativity (Amabile et al. 1986; Medeiros et al. 2014). Medeiros et al. (2018) hypothesized that the timing of when constraints are introduced is important as it would force participants to redefine the problem. The results indicated that when participants received constraints prior to idea generation, but after defining the problem, they revised the problem definition, which resulted in more creative ideas. In addition, receiving constraints later in the process resulted in lower creativity compared to those receiving constraints earlier in the process. This may be a result of the difficulty in revising the problem definition later in the process when a solution is already emerging and being developed. Other research also supports the notion that early evaluation, which likely results in change to the problem definition, results in increased creativity (Fürst et al. 2012).

Reiter-Palmon and Harms (2018) have specifically set out to study the effect of revisions on creativity. The study included two manipulations: (1) Problem definition – participants were explicitly asked to define the problem before solving it or proceed directly to the solution generation phase, and (2) Revisions – participants were asked to revise their problem definition and solution, or they were not. Solutions were then evaluated on their quality, originality, and complexity. Those in the revision condition generated

solutions that were of higher quality, more original, and more complex compared to those that were not asked to revise their ideas.

Intraindividual Sources of Problem Redefinition

While problem redefinition can occur within the individual, when that person returns to and modifies their original definition of the problem, another way problem redefinition can happen is across individuals. There are two ways in which this can occur. The first type of intraindividual problem redefinition occurs when an individual does not accept the way others define the problem, instead choosing to define it differently. An example of this is the discovery of penicillin (Gaynes 2017). This discovery was credited to a “chance event.” However, when others saw as experiments that did not work, Fleming was interested in the why – he redefined the problem from a failure of the experiment to trying to understand why the bacteria did not grow in the petri dish. Penicillin was discovered as a result of a choice to redefine a problem.

A second way in which intraindividual problem redefinition can occur is when teams work together to define a problem in a new way, one that integrates multiple perspectives and problem definitions across individuals. As indicated, problem definition is based on past problem-solving experiences. This poses a significant issue for teams engaging in creative problem-solving, especially diverse teams. As a result of the diversity (demographic and/or functional) individual team members will define the problem differently based on their different past experiences. Cronin and Weingart (2007) coined the term “rGap” to denote differences in how individual team members understand the problem and define it differently. Weingart et al. (2005) found that teams with larger rGaps tend to have difficulty during problem definition, leading to poor cognitive integration as a team and lower creativity. However, Weingart et al. (2008) found that when teams identify the discrepancies early and use them to communicate about alternative pathways to

solving the problem, creativity is higher for teams with larger rGaps. The results from these two studies suggest while different perspectives on how the problem is defined exist in teams, when team members discuss the different perspectives, solutions to the problem are more creative. The integration of diverse perspectives and conceptualization characterizes the team problem redefinition process.

Works by Leonardi (2011) and Gish and Clausen (2013) suggest that team members are frequently not aware of these discrepancies in perspectives and problem definition. Further, both studies found that team members were more likely to experience conflict and disagreement as a result of having these discrepancies. However, when team members were encouraged to discuss how problems were defined, the diverse teams were able to overcome the differences, integrate the diverse perspective, and redefine the problem based on that integration. More creative solutions followed as a result. Finally, Toader and colleagues (Toader et al. 2019; Toader and Kessler 2018) suggest problem redefinition results in more creative ideas when teams are diverse and team members have dissimilar problem representations. That is, when team members discuss, integrate the different ways in which they define the problem, which results in problem redefinition, the outcome is increased creativity of the solution. Overall, the studies cited indicate that when teams work on a creative problem-solving effort, individual problem definitions need to be modified and redefined to allow for the integration of multiple problem definitions.

How and Why Problems Are Redefined

As problem redefinition involves a reconsideration of goal states, literature on multiple goal pursuit and goal adaptation may help explain why individuals decide to return to their original problem definition. Theories of motivation (e.g., expectancy-valence theory, goal-setting theory, and control theory) suggest that the instigator of

goal change is perceived discrepancy between what is expected and what actually occurs (Campion and Lord 1982; Hollenbeck and Klein 1987; Locke et al. 1988; Lord and Hanges 1987; Wanous et al. 1983). A model of goal adaptation by Swait et al. (2018) proposes that adapting the weight one places on prior goals depends on the goal's attainability. More attainable goals are given more significance. Realized goal-outcome discrepancies may highlight which portions of an ambiguous and ill-defined problem is solvable after feedback from the environment is received. The problem redefinition process might be used to reprioritize goals by attainability.

Beyond reprioritization, problem redefinition may change goals in problem structures altogether. Research by Wieber et al. (2014) suggests that by default, people change their actions, not their goals, when there are discrepancies between expected and actual outcomes. However, the authors found that when people deliberate over pros and cons when forming goals, they are likely to forego plans related to resolving original goals and readdress the initial goals themselves. According to Wieber and colleagues, deliberating pros and cons is associated with being in a "why" mindset. This mindset points out that goals and objectives can be flexible and alterable in dynamic situations. In the context of creative problem solving, these findings imply that active engagement in problem definition might allow people to readdress goals and problem objectives when necessary. Problem redefinition may be a natural consequence of problem construction when discrepancies between expected and actual outcomes are perceived.

Kernan and Lord (1990) examined these discrepancies alongside goal reprioritization in multiple-goal environments. Problems that can be solved with a creative idea often are ambiguous and involve multiple objectives (Mumford et al. 1991; Reiter-Palmon 2018; Schraw et al. 1995). As such, Kernan and Lord's (1990) findings can speak to changing goals in the creative problem-solving process. The authors found that people prioritize goals based on differences between their expected outcomes and feedback

from the environment. Factors that influence goal reprioritization include the value one places on producing a creative solution and beliefs about effortfully accomplishing a goal. That is, a person might change their creative goals and paths to accomplish those goals when they believe producing a creative solution is important and when they believe that producing a creative solution is attainable. Indeed, understanding what is and is not possible is key to evoking problem redefinition.

Problem Redefinition and the Possible

A key aspect of problem definition and problem redefinition is the focus on what is possible. Problem representations, which are the building blocks of problem definition and redefinition, contain elements that focus on potential but not guaranteed resolutions. Problem representations include goal states or desired outcomes, which identify the possible. In addition, problem representations also incorporate constraints or restrictions, which focus on aspects of the problem or environment in terms of what cannot be done or cannot be achieved. The possible and impossible are found in problem definition and problem redefinition. However, it is important to note that while restrictions and constraints indeed highlight the actions and goals that cannot be resolved, the development of a solution may not always be impeded. Problem-solvers may look for ways, sometimes creative ways, to overcome these constraints. In addition, constraints may not necessarily be present as the problem-solver understands them. That is, constraints may be a result of underlying assumptions that have not been verified or based on past problem representations. These constraints may not apply to the current situation. In both cases, working around the constraints or questioning assumptions may provide a way to redefine the problem. When problem-solvers engage in these activities, not only are they redefining the problem, they are also engaging in imagining the possible. By questioning assumptions, the creator will be able to identify true restrictions and dismiss those that

do not truly apply, therefore increasing the potential and possibilities.

Importantly, problem redefinition is critically connected to possibilities. At the heart of problem redefinition is the recognition that the original definition of the problem was lacking or incomplete. The need to revise and redefine the problem drives the problem redefinition process. As such, the recognition of new possibilities is inherent in problem redefinition.

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Prolepsis

Ignacio Brescó de Luna
Aalborg University, Aalborg, Denmark

Abstract

Prolepsis is an old and multifaceted term that could not be more significant in relation to the possible. From its original epicurean meaning, referring to the criteria of truth whereby we make judgments about the reality we perceive, prolepsis is generally associated with the notion of anticipation. In argumentation studies, prolepsis alludes to the anticipation of a possible counter-argument to one's discourse in order to answer it in advance, while in narratology it refers to the narrative figure of flash-forward or the anticipation of future events in a storyline. After providing some definitions of prolepsis, along with an historical contextualization of this term, this chapter delves into some current lines of research based on this concept with a particular focus on the sociocultural studies on developmental psychology and collective memory. The concluding discussion reflects on the theoretical significance of prolepsis in relation to the study of the possible in a technology-driven world, marked by acceleration of time and uncertainty.

Keywords

Prolepsis · Anticipation · Future orientation · Development · Sociocultural psychology · Collective memory

Introduction

Prolepsis is a term as old as it is multifaceted, as esoteric at first sight as it is inspiring and relevant in relation to the possible. Originally coined by Epicurus in the third century BC to refer to the sort of preconceptions through which we make judgments about the things we perceive (O'Keefe 2010), the notion of prolepsis has since been spilling out into different areas and taking on

different meanings. Generally speaking, the term prolepsis can be associated with the notion of "anticipation," whether in the Epicurean sense, as the criteria of truth against which we measure and judge our perceptions, as the rhetorical figure of foreseeing and forestalling objections against one's position by answering them in advance, or as the narrative anticipation whereby future events are textually related before their time. The notion of anticipation has also brought prolepsis into fields of study where time stands as a crucial element. Sociocultural approaches in developmental psychology have adopted the concept of prolepsis in order to examine how the anticipation of the child's future by the adult influences the upbringing. From a more sociogenetic perspective, anticipation of imagined futures is also taken into account when studying matters such as the reconstruction of collective past in national groups, the formation of social movements, or the role of technology, for example, through social media, in the way we experience the present as the object of a future memory (Currie 2007).

As the reader must have already anticipated, the meaning of prolepsis is inherently linked to other chapters contained in this volume. Prolepsis, as anticipation, implies a future orientation by going beyond the here-and-now. This includes phenomena ranging from argumentation, rhetoric and storytelling as well as issues around upbringing, learning, and memory that all encompass the very experience of time. Prolepsis also involves imagination about possible worlds or possible selves and thus the creation of imagined bridges toward what is yet to be developed. Last but not least, prolepsis cannot be understood without taking time into account; something crucial in development, be it ontogenetically, in relation to each individual's life course, or at a more sociogenetic level, in the formation of human groups.

This chapter will begin by providing some definitions of prolepsis¹ and contextualizing this term historically. It will continue by reviewing

¹Some meanings of prolepsis (viz., in grammar and botany) are not addressed in this chapter due to their irrelevance vis-à-vis the possible. For more information, see prolepsis (2007) in the Oxford English Dictionary.

some lines of research inspired by this term, giving preeminence to the sociocultural approach to it, especially in developmental psychology and memory studies. The chapter will conclude with a general reflection on the relevance of prolepsis vis-à-vis the study of the possible in a technology-driven world.

Some Definitions of Prolepsis

Etymologically, the term prolepsis stems from the Greek *prolambanein* which means “to take beforehand” (*pro* “before” plus *lambanein* or “to take”). *Prolepsis* is a key notion of Epicurean empiricist philosophy. As preconception or anticipation of the mind, it refers to empirically formed concepts derived from our previous perceptions accumulated in memory with which we become apt to make judgments about things. Two centuries after Epicurus, the Roman philosopher Cicero provided a Latin translation of prolepsis, as anticipation (*anticipationem*) and prenotation (*praenotio*), and defined this term as “a sort of preconceived mental picture of a thing, without which nothing can be understood or investigated or discussed” (p. 45). For their part, the Epicureans of the late Hellenistic and Roman period elaborated upon the original concept in different ways (Tsouna 2016). For instance, Lucretius, in his philosophical poem *De Rerum Natura*, translated prolepsis as *notitia* or *notities*, understood as preconception. Later on, another famous Epicurean, Diogenes Laertius, classified prolepsis – alongside sensations (*aistheseis*) and feelings (*pathe*) – as one of the criteria of truth, applying the term to the prototypes or exemplars (*týpos*) stored in our memory, as traces of our experience of the world, which we draw upon to make claims about it (Holmes 2005, p. 548). Along these lines, as Holmes (2005) points out, “Epicureans are often caught using prolepsis strategically to protect key claims from challenge, even when these extend, illegitimately it would seem, beyond the evidence available to direct perception” (p. 548).

This latter use of prolepsis brings us to the meaning of this term in rhetoric. In ancient Greece and Rome, prolepsis was employed in two

different ways by orators. One consisted of anticipating a reference prior to its actual introduction in a subsequent part of the speech, thus capturing listeners’ attention as they were challenged to infer the referent from the present or ensuing comments. As listed in the *Oxford English Dictionary*, this use of prolepsis can be defined as “the rhetorical figure in which a matter is stated in a brief summary manner before the particular details, aspects, etc., are set out” (Prolepsis 2007). The other rhetorical use of prolepsis, suggested at the end of the previous paragraph, is defined in the *Oxford English Dictionary* as: “The action of anticipating a possible objection or counter-argument in order to answer or discount it, or to deprive it of force” (Prolepsis 2007). This rhetorical figure, also known as *procatalepsis*, was particularly popular among Roman rhetoricians such as Quintilian who, in his *Institute of Oratory*, describes prolepsis as the “anticipation, by which I mean our answering of objections which we foresee” (Quintilian 1805, p. 161, cited in Besel 2012). This second use of prolepsis is still relevant in argumentation studies and is understood “as a means to position the speaker in a favourable way and to frame the issue in an acceptable way for the audience” (Xenitidou and Greco Morasso 2014, p. 104). Similar to what is known as a *disclaimer* in Discursive Psychology (see discourse), such an argumentative device is commonly used when people introduce a racist discourse by first denying being racist (“I am not a racist person, but. . .”). In this regard, rhetorical prolepsis aims to prevent the possible future it anticipates in the very act of anticipating it (Currie 2007), although, as some studies show, prolepsis miscalculation may lay the ground for the speaker’s opponents to raise objections not anticipated in the former’s discourse (Xenitidou and Greco Morasso 2014).

The notion of anticipation in prolepsis adopts another particular definition in narratology, also listed in the *Oxford English Dictionary*: “A prefiguring or foreshadowing of a future event in a narrative; the narration of an event at a point earlier than its chronological place in a story” (Prolepsis 2007). From this field, Genette (1980) defines prolepsis as “the narrative manoeuvre that

consists of narrating or evoking in advance an event that will take place in the future” (p. 40). So, contrary to analepsis or flashback – consisting of bringing the past into the present in the story – prolepsis or flash-forward is the anticipation of future events in a storyline before returning to the present of the tale to proceed with the sequence (Currie 2007, p. 29–31). One classic example can be found in the famous first lines of García Márquez’s book *One Hundred Years of Solitude*: “Many years later, as he faced the firing squad, Coronel Aureliano Buendía was to remember that distant afternoon when his father took him to discover ice” (1967/1970, p. 1). Bringing the future into the present – in this case, bringing the tragic outcome into the very beginning of the story – is a narrative mechanism for guiding the reader, since subsequent events in the plot acquire meaning and directionality vis-à-vis a future scenario already presented (for a cognitive approach to prolepsis in readers’ text processing, see Bridgeman 2005).

Drawing on this narrative meaning of prolepsis, some authors have reflected on how anticipation operates in life, what significance life events acquire when we look back upon them from an imagined possible future. Along these lines, Currie (2007) highlights how technology and the constant use of digital photography “installs in the present an anticipated future from which the present will be re-experienced as representation of the past” (p. 49). Thus, the growing tendency to stream our lives through social media would lead people to experience the present as an aesthetic commodity, as the object of a future memory. Currie (2007) connects this analysis to Derrida’s (1998) notion of *archive fever*, according to which moments exist only for the purposes of keeping a record. The very possibility of representing the past in the future makes recording devices, such as digital photography, play an important role in structuring the present in anticipation of its recollection. This idea is also linked to Derrida’s (1973) *logic of supplementarity*, which assumes “a kind of temporal loop by which things which happen later in a sequence are understood as the origins of things from which they apparently originate” (Currie 2007, p. 42). According to this logic,

instead of attributing a secondary role to the subsequent broadcasting of certain media events (say, a terrorist attack), such events would be originated by the very possibility of being broadcast later and remembered in the future. From this perspective, Currie (2007) concludes by comparing the narrative meaning of prolepsis with the *logic of supplementarity* that in both cases, the future is brought into the present in such a way that the anticipation of the former seems to cause the latter.

Anticipation appears to be at the core of the multiple meanings of prolepsis briefly described here. It is present in its original philosophical meaning, as an anticipation of the mind whereby we make judgments about things. As a rhetorical maneuver of anticipating future elements in speech or possible imagined objections to one’s position, the meaning of prolepsis is equally imbued with anticipation, although imagination and future orientation also come to the foreground as defining elements. These elements – inextricably related to time – appear to adhere to the subsequent meanings of prolepsis, whether as the anticipated future outcome of a storyline in narratology, or in the form of a projection, looking to an imagined possible future. In the latter case, the future-oriented aspect of prolepsis goes hand in hand with a kind of reversed causality whereby an imagined future appears to structure the present, making the latter anticipate its own past as the object of a future memory (Currie 2007). Using Aristotelian terms (see Aristotle), we can say that a final cause – a possible imagined future – becomes a significant one as it acquires pragmatic force in structuring the present. This logic is also central in various lines of research inspired by the notion of prolepsis, particularly in sociocultural approaches to developmental psychology and collective memory. In the following section, some research applications of prolepsis are briefly shown. In developmental studies, prolepsis is applied to child rearing, as well as to the study of children developing competencies through social interaction with adults. From a more sociogenetic perspective, prolepsis is also used to explore the development of social groups and the future-oriented

dimension of the collective past, as a particular case of constructive memory.

Research on Prolepsis

Sociocultural Approaches to Ontogenesis

Inspired by the works of Vygotsky, sociocultural approaches in psychology have been pursuing the reinstatement of a genuine developmental science focused on human experience in time. Along these lines, Michael Cole (1996) applies the concept of prolepsis in developmental psychology to the study of upbringing. According to Cole, adults interpret upbringing in terms of what they imagine or expect their child's future to be, the result being that parents' expectations mediate (see mediation) their actions during the upbringing, thus channeling the child's present toward the parents' imagined future. For instance, in relation to the parents' concept of, and expectations about, the child's gender, Cole (1996) points out:

Parents almost immediately start to talk about and to the child. The things they say arise in part from phylogenetically determined features (the anatomical differences between males and females) and in part from cultural features they have encountered in their own lives (including what they know to be typical of boys and girls). A typical comment about a newborn girl might be "I shall be worried to death when she's eighteen" or "She can't play rugby". (p. 184)

Parents' expectations about the child's possible future are, in turn, culturally mediated, since they are based on the parents' own past experience, including the way they were raised, as boys or girls. As can be noted, prolepsis operates as a future-oriented cultural mechanism whereby the imagined future of the child, based on the parents' past experiences, is brought into the present adults' handling of the baby. As Cole (1996) highlights, "only a culture-using human being can "reach into" the cultural past, project it into the future, and then "carry" that conceptual future "back" into the present to create the sociocultural environment of the newcomer" (p. 186).

Whereas in Cole (1996), prolepsis is understood as the child's present being structured in light of something that is not yet developed, other authors (Stone and Wertsch 1984) use prolepsis to analyze

the cycle of interactions whereby the child strives to infer adults' instructions in those joint activities whose goals are not yet understood by the former. This latter use of prolepsis is closer to one of its rhetorical meanings described in the previous section, the anticipation of a reference prior to its actual introduction later on in the speech, thus engaging the listeners by challenging them to infer the reference for themselves from the present or ensuing comments. According to Stone (1998), this is what adults unintentionally do when interacting with children and guiding them into the accomplishment of a joint task whose meaning is beyond the child's grasp. Just as audiences in ancient times were challenged to infer the meaning of a speech in advance, so the child is challenged to act in anticipation of fully comprehending the task and must develop an understanding from the actions or instructions in which he or she is led to engage (Stone 1998). From this point of view, *proleptic instruction* (Rommetveit 1979) is understood as the communicative process, wherein a child, in carrying out another's instructions, ends up developing a better understanding of both the ultimate goal of the task and why his or her behaviors contribute to it (Stone and Wertsch 1984). Here, we can once again see a kind of reversed causality in operation, for it is not the child's previous competence in a certain task that makes the performance of that task possible; rather, it is the child's initial performance – when interacting with the adult – that enables her or his competence to gradually develop.

Prolepsis, as an anticipated competence made possible through previous social interaction, can be linked to some important concepts in sociocultural developmental psychology. It is in line with Vygotsky's (1978) notion of *interiorization* or *ingrowth* and his law of cultural development, according to which every mental function appears twice, first inter-mentally, then intramentally. In Vygotsky's words, "an operation that initially represents an external activity is reconstructed and begins to occur internally" (p. 56). Likewise, it runs through the concept of Zone of Proximal Development (Vygotsky 1978), namely the distance between the child's capacity to accomplish a task independently and the level of potential development through the guidance of others. It

also relates to the metaphor of scaffolding referring to situations where a more capable other guides a child to accomplish a task while leading the latter to assume more responsibility over the activity in question (Stone 1998). This implies a transfer of task understanding resulting in a shift from other-regulation – through the adult’s instructions – toward a gradual self-regulation by the child in taking responsibility for the task and being able to solve it independently. This change from other-regulation to self-regulation, so important in socio-cultural developmental psychology, leads some authors to the terminological division of prolepsis into two types: *heteroprolepsis* and *autoprolepsis*. According to Meshcheryakov (2007), heteroprolepsis occurs whenever the adult, in interacting with the child, anticipates something that is yet to be developed. In a similar way to the process described above, when a mother addresses her toddler as a being capable of communicative activity, she is proleptically calling the child’s potential development into being by means of her speech and instructions. On the other hand, autoprolepsis implies a form of self-anticipation, such as when a child imagines him or herself in the role of a possible future self by playing adult roles (mother, teacher, older brother, etc.). According to Meshcheryakov (2007), “we can assume that in early ontogenesis there is a shift from heteroprolepsis to autoprolepsis” (p. 167).

Sociocultural Approaches to Sociogenesis

Heteroprolepsis and autoprolepsis, as theoretical tools to study development in ontogenesis, are also applied to study, from a sociogenetic perspective, the development of social groups. Taking a Marxist perspective (see Marxism) and in line with Vygotsky’s approach to development, De Smet (2012) departs from activity as a way to anticipate and develop new competences in the Egyptian workers’ movement in the face of the 2011 Revolution. In this context, autoprolepsis operates as a form of self-anticipation through action, enabling the workers’ movement to imagine a potential future moment in its struggle. In Smet’s (2012) own words:

Wildcat strikes and their illicit committees imagine trade unions; workers’ control over factories

establish their potential of running the economy without capitalists; and practices of participation, election, and discussion within the movement foreshadow forms of participative democracy. (p. 143)

If in autoprolepsis potential development is self-anticipated by the subject’s or group’s own actions, in heteroprolepsis, potential capacities are called into being by the action of another subject. In this case, the saliency of some actions carried out by a specific group of workers in Egypt (the Mahalla movement) became a form of heteroprolepsis for other organizations in the country to start similar struggles, using analogous actions, thus enabling initially scattered groups to gain consciousness of their shared class demands. In both cases, worker activism – originally born out of necessity – starts by producing social change; a change that then turns inward, producing changes inside the workers’ organization and making something not yet developed, such as the group’s political consciousness, possible.

Also from a sociogenetic view, prolepsis is applied to the study of how the collective past is remembered by groups. Departing from a constructive notion of memory, Brescó (2017, 2018) examines how the collective past is frequently reconstructed according to different imagined futures in order to foster current actions, thus guiding the present toward certain goals. Such a dynamic relationship between past, present, and future can be found in certain utopias, in most nation-building processes, as well as in nationalist movements seeking either independence or a nostalgic renewal of the past. Nationalist independence movements are paradigmatic cases of this, for it is the future independent state that leads the past to be nationally reconstructed, and rhetorically used, in order to justify such a political goal. In this way, the imagined future is presented as a natural consequence of the past, when in fact, the former has been brought into the present by a certain way of reconstructing the latter. Here, the weight shifts from the past to the future when it comes to explaining how memories are constantly constructed and reconstructed in the face of ever-changing collective goals and challenges. This, in turn, adds more complexity to the traditional linear concept of time, based on efficient causality, in

which events are inevitably pushed from the past into the future. According to this more-circular outlook, it is an imagined scenario that pulls the present toward the future through a certain way of reconstructing the collective past. Just like in Cole's (1996) upbringing example cited above, a final cause – the imagined future scenarios, be it of the child or the nation – becomes an efficient one as it acquires pragmatic force for mobilization, thus channeling current actions toward what is not yet present.

Prolepsis and the Possible in Today's Uncertain World

This chapter contains different meanings and applications of prolepsis. Mainly understood as a form of anticipation, it features examples of prolepsis operating at a microgenetic level in the way adults anticipate certain competences when interacting with children, at an ontogenetic level in how parents imagine the child's future life course, or on a more sociogenetic scale, when groups anticipate possible futures by engaging into action or by remembering the collective past. In all these cases, prolepsis implies bringing an imagined future into the present. As Currie (2007) points out:

...prolepsis produces the future in the act of envisaging it, so that the possible transforms itself into the actual. It does so in a range of modes and moods which can be placed somewhere on a scale between fear and hope. These two modes of [anticipation], fear and hope, clearly operate as much in the reading of a fictional narrative as they do in the everyday projections we make into the future, in our realisations and evasions of fearful outcomes, or our fulfilled and dashed hopes. (p. 44)

Prolepsis is positioned as a particularly relevant concept vis-à-vis political imagination in an accelerated and uncertain world (see uncertainty), where scientific and technological advances are shaping new ways of imagining the future in relation to the past and the present (see sociotechnical imaginaries). For example, since the advent of nuclear energy, and its military use in Hiroshima and Nagasaki, the visuals of the nuclear (the mushroom cloud, devastated cities, the radiation symbol, etc.) have been communicated worldwide. In so doing, they have

become a set of iconic artifacts for remembering the past vis-à-vis potential futures that we would like to build or avoid as a human species. The future can thus be imagined as a placid continuation of the present, or even as a progressive improvement of it. It might also be imagined as a dystopia inching closer to the present – as environmentalists warn, or as something to be gained and fought for in order to leave behind a past of inequity and conflict. Conversely, the past can also be something not to be repeated in the future as in the case of the nuclear bomb – or, by contrast, something we long to recover in the future, such as a nostalgic view of an imagined unproblematic past. In sum, through prolepsis, we are able to imagine a possible future in light of our actions carried out in the present, as well as to imagine other possible present-day realities in light of future scenarios we both fear may happen or hope to make possible.

Cross-References

- [Anticipation](#)
- [Constructive memory](#)
- [Discourse](#)
- [Dystopia](#)
- [Here and Now](#)
- [Hope](#)
- [Narratives](#)
- [Political Imagination](#)
- [Possible Worlds](#)
- [Rhetoric](#)
- [Social Change](#)
- [Storytelling](#)
- [Uncertainty](#)
- [Utopia](#)
- [Zone of Proximal Development](#)

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A Propulsion Perspective on Creative Contributions

Robert J. Sternberg¹, James C. Kaufman² and Jean E. Pretz³

¹Department of Human Development, Cornell University, Ithaca, NY, USA

²Neag School of Education, University of Connecticut, Storrs, CT, USA

³Elizabethtown College, Elizabethtown, PA, USA

Abstract

This article presents a propulsion theory of creative contributions and discusses the reward system under which it operates. The theory argues that creative contributions are of three kinds – paradigm-preserving, paradigm-defying, and paradigm-integrating. Within each of these categories are various kinds of contributions that change a field in different degrees. For example, the most valued kind of creative contribution is typically a paradigm-preserving forward incrementation, which moves a field forward a bit and threatens almost no one. In contrast, a paradigm redirection attempts to move the field in a different direction, threatening the work and standing of many in a given field, who then resist the direction suggested by the contribution. Reward systems for different kinds of creative contributions can change with time and place. For example, until recently, replications were valued little and often were devalued. Today, at least in some scientific fields such as psychology, they are valued much more because of perception on the part of some scientists that many published findings have proved not to be replicable.

Keywords

Propulsion theory · Advance forward incrementation · Conceptual replication · Forward incrementation · Redefinition · Redirection · Reconstructive/regressive redirection · Reinitiation · Synthesis

When we talk about what is possible, we must think creatively, because we are talking about projecting from what we know to what we do not know and only can imagine. Creative thinking is thinking about what is possible and how it builds on and departs from what we already know and can do. But people vary in how creatively they can imagine future and alternate worlds of possibility.

Marie Curie, Charles Darwin, Pablo Picasso, James Baldwin, and Pyotr Tchaikovsky were all, in their own domains of work, much more creative than the overwhelming majority of their peers, past and present. But they were not only *more creative*; they also were *differently creative*. That is, they were creative in ways that differentiate them from you, us, and pretty much everyone else we are likely to know. Even if we create new things, we are unlikely to be remembered for that work hundreds of years after our death; and we likely will never quite figure out what we could have done that would have put ourselves in the stellar company of people like Shakespeare, Mozart, and other superstars of the creative universe.

What is it that distinguishes these superstars, aside from the fact that they are more creative than nearly everyone else? We argue that they are creative in different ways from the large majority of people. A propulsion theory of creative contributions helps explain how (Sternberg 1999; Sternberg et al. 2001, 2002; Sternberg and Kaufman 2012).

The Propulsion Theory of Creative Contributions: A Brief Recap

The propulsion theory of creative contributions holds that creativity can vary not only in level but also in kind. Different kinds of creativity serve different functions in the universe of creative contributions. These different kinds of creative contributions, in turn, can be viewed as being of three different kinds: paradigm-preserving, paradigm-defying, and paradigm-integrating. The eight kinds of creativity, in brief, are as follows.

Paradigm-Preserving Kinds of Creative Contributions

There are four kinds of paradigm-preserving creative contributions.

Conceptual replication. Conceptual replication involves repeating work that has been done in the past but with meaningful changes to examine the generalizability of the previous work. An example would be extending validation of an intelligence test from a North American sample to a South American or Asian sample of individuals. Examples of such conceptual replications can be found in cross-cultural validations of intelligence tests (see Sternberg 2004). Replications can be found in any domain, from visual art to medicine to business.

Redefinition. Redefinition involves seeing a new use for something old. For example, aspirin originally was used for pain but then was used well for preventing a repeat of a heart attack. In scientific research, a redefinition was using intelligence tests not only for their original purpose – to predict school achievement (Binet and Simon 1916) – but also to predict long-term health-related or economic outcomes (Deary et al. 2009). Many revivals/remakes of theatre productions, television shows, or films fall into this category.

Forward incrementation. Forward incrementation is probably the most commonly encountered kind of creativity. Forward incrementation represents the next, usually fairly minor step in a program of creative achievement. For example, it might represent the next study in a series of studies, where each study represents some kind of programmatic progression in a research program. Thus, an extension of an existing model of reasoning to new kinds of reasoning problems would represent a forward incrementation (Sternberg and Gardner 1983).

Advance forward incrementation. An advance forward incrementation is a large step forward in an existing program of work and thus may be seen as an extension of the usual

forward incrementation. It is included as a separate category because whereas a forward incrementation typically is well received, an advance forward incrementation usually is not – it represents a step too far for many people in the field of the contribution. It may take years for such a creation to be properly recognized. One example of advance forward incrementation would be the introduction of online courses in US higher education. Although institutions that adopted this approach decades ago were viewed with skepticism at the time, online education is now being embraced by many leading traditional institutions of higher education (Lederman and Lieberman 2019). Early adopters had a highly innovative idea that was initially not accepted by the mainstream, but it has become clear that they were actually ahead of the curve.

Paradigm-Defying Kinds of Creative Contributions

There are three kinds of paradigm-defying creative contributions:

Redirection. A redirection takes a field where it is and suggests that the field is going in the wrong direction and thus needs to go in a new direction. Expanded models of intelligence (e.g., Gardner 1983, 2011; Sternberg 1985, *in press*) suggesting that *g*-based accounts of intelligence are insufficient to account for the whole of the phenomenon would be examples of redirections.

Reconstructive/regressive redirection. A reconstructive/regressive redirection is a kind of redirection, except one that redirects a field from where it once has been rather than from where it currently is. In a reconstructive/regressive redirection, an individual suggests that a field needs to move in a new direction but taking off from where it was in the past rather than from where it is now. The idea is that, at some point, the field went in the wrong direction and now needs to take a step back and return to where it was so as to achieve a redirection. An example would be work of Drew Westen (e.g., 1998), which argues that when

many clinical researchers threw out the theorizing of Sigmund Freud, they threw out the baby with the bathwater and lost valuable insights that could have led the field forward. Many restaurants with a retro feeling in décor or recipes (but modern techniques and sensibilities) may fall into this category.

Reinitiation. In reinitiation, a creative individual essentially decides that a field not only needs to redirect itself but actually needs essentially to start over. Einstein, Picasso, and Darwin were reinitiators. Einstein proposed a wholly new kind of physics, Darwin a new view on how life evolves, and Picasso (as well as Braque) a wholly new kind of art. Chomsky (2015) similarly was a reinitiator in the field of linguistics.

Paradigm-Integrating Kinds of Creative Contributions

There is one kind of paradigm-integrating creative contributions:

Synthesis. A synthesis is a uniting of work from two or more disciplines or paradigms. The late Herbert Simon was a master synthesizer, often bringing together ideas from economics, business, artificial intelligence, and psychology. Simon's most famous book, *Administrative Behavior* (Simon 1997), represented such a masterful synthesis.

Relation of Kinds of Creativity to Amounts of Creativity

In general, paradigm-defying and paradigm-integrating kinds of creativity represent greater amounts of creativity than do paradigm-preserving kinds of creativity (see also Kuhn 2012). However, this relation does not necessarily hold. For example, an advance forward incrementation can be highly creative. Similarly, a paradigm shift may be novel but not particularly high in quality, thereby fulfilling in large degree only part of the definition of creativity (see Kaufman and Sternberg 2019). In any field, there are dead-end paradigm shifts that start to take hold and then prove to be short-lived. For example, the act frequency approach in personality (Buss and

Craik 1983) originally seemed to represent an exciting new approach. However, it faded rather quickly because so much of personality is not directly represented in behavior and any behavioral act can represent multiple causes in personality (i.e., Does someone hit people because he is aggressive or because he is bullied or because he lacks physical inhibition?).

The Reward Structure for Different Kinds of Creativity

When we initially wrote about the propulsion model (e.g., Sternberg et al. 2002), we believed that the reward structure was somewhat straightforward. In the short run, we believed, forward incrementation tends to be the most rewarded kind of creativity because it moves a field forward at the same time yet also does not threaten existing paradigms and vested interests. Most articles in journals are forward incrementations because reviewers have little to lose in terms of their own status in the field if the forward incrementations are produced. Most funded grant proposals are forward incrementations for much the same reason – reviewers can easily recognize the incremental contribution of the work without feeling threatened, and moreover, they can have some degree of confidence that the forward incrementation will be successful, at least in some degree. In our initial view, conceptual replications tended not to be as highly rewarded in the short term because their creative contributions are, on average, smaller than are those of forward incrementations. Advance forward incrementations and paradigm-defying kinds of creativity tend most to be rewarded in the long run because they are field-changing but are less likely to be rewarded in the short run because they may threaten so many people. Critics may realize that these contributions not only transform the field but also risk turning their own work into an obsolete irrelevancy.

Some paradigm-defying contributions take off for a while, and then there is some kind of regression to the mean of what people have been doing before. For example, Howard Gardner's (1983,

2011) theory of multiple intelligences initially generated a lot of excitement among educators because it seemed to point a way forward for dealing with children who had distinctive talents but who were not being recognized as "intelligent" by the educational system. But its educational reach today is probably somewhat lower than it was in the early years after the first volume was published (1983). First, the theory was hard to test empirically. Second, scientific empirical support for the theory was, at best, weak (Visser et al. 2006). Third, the continued pressure of the testing culture in schools did not allow for much departure from teaching that, in essence, taught to the tests.

A more common occurrence is that a paradigm at first is dumped on by colleagues and only slowly comes to either be viewed as a viable alternative to the initial paradigm or else crowds out the initial paradigm. For example, the cognitive approach to intelligence got off to a relatively slow start (e.g., Hunt et al. 1973; Hunt et al. 1975; Sternberg 1977) but greatly picked up when its focus turned to the importance of working memory for intelligence (Conway et al. 2003; Kyllonen and Christal 1990).

Changes in the Structure of the Reward System over Time

Several so-called componential models of creativity have held that the environment for the production and evaluation of ideas is extremely important in terms of the creativity that emerges from a given environment (e.g., Amabile 1996; Sternberg and Lubart 1995). In both Amabile's and Sternberg and Lubart's componential models, the environment can be determinative of whether creativity even occurs. That is, even if other components of creativity are present, such as high levels of intellectual abilities, openness to experience, intrinsic motivation, and what Sternberg (1997) has called a "legislative style" – a desire to create – in the absence of a supportive environment, creativity may not emerge. Others have made a similar point. For example, Florida (2019) has pointed to the importance of cities in the development of creativity, and Simonton

(1999) has shown that highly creative individuals are more likely to emerge from some historical periods than others. These inquiries are relevant to our present examination of the environmental reward structure surrounding the kinds of creativity specified in the propulsion model.

When we wrote our original articles, we viewed the environmental reward system for different kinds of creative contributions as rather time-honored. That is, we saw a fixed reward system that almost always rewarded certain kinds of creative contributions while ignoring or penalizing others, at least in the short term. During our careers, however, we have seen what we believe is a change in the reward system in a way that, unfortunately, risks penalizing more serious kinds of creativity and, for better or worse, may increasingly reward less creative work. At the same time, we also have observed increased rewards for higher levels of innovation in some fields, such as artificial intelligence.

Increased Reward for Replication

One change is in increased value of replications, whose value we perceive as having risen substantially. Earlier in our careers, it was extremely hard to get replications published, and they were typically only published if there were multiple instances of non-replication and the study being replicated was viewed by the field as extremely important. When they were published, it tended to be in less prestigious journals. Today, even the most prestigious journals (such as *Nature* and *Advances in Methods and Practices in Psychological Science*) are publishing (registered) replications. *Psychological Bulletin* will devote an entire section or issue to replication, as have other journals such as *Perspectives on Psychological Science*. The interest in replication stems, at least in part, from what some perceive as a replication crisis in the behavioral sciences (e.g., Lindsey 2015; Open Science Collaboration 2015; Pashler and Harris 2012). The goal of such replications is not to do minimally creative conceptual replications but rather to perform direct replications. If these studies are creative, it is only in a minimal way; they are actually intended to be as uncreative as possible – that is, the goal is to reproduce the

original conditions of the initial studies as exactly as possible. This new interest in direct replication opens up prestigious channels for publication of research intended to be uncreative, something of a novelty in the scientific literature. In the past, uncreative studies were relegated to the journals at low points on the totem pole, rather than being published in journals at the top of the totem pole.

There are many advantages of the publication of such direct replications. First, they help ensure that findings perceived by the field to be important are real. Second, they provide a warning to investigators who might seek to publish studies with flimsy sampling or data analyses that they need to be vigilant because they may open themselves to frontal assault if their findings do not replicate. Third, these studies send a more general message to the field that solid results are important – that science only can be built on a firm foundation. Fourth, such studies provide an outlet for scientists who believe that science has been guilty of Type I errors and who want to play a role in correcting such errors. Fifth, replications prevent a waste of resources and time by preventing new studies and programs of research from being rooted in deeply flawed initial research.

We would argue, however, that at the same time that there are advantages to the new system of soliciting registered replications, there also may be some drawbacks in terms of the creativity of scientific research (see, e.g., Kaufman and Glăveanu 2018). First, the publication of registered replications, and the sometimes extreme publicity surrounding them, may lead some investigators to fear doing innovative work that may yield unexpected findings. The anxiety surrounding massive registered replications and the possible consequences of an unreplicated finding may be more than some investigators are ready to tolerate. So those investigators may be more cautious, indeed too cautious, in their creative work for fear of being shot down in a very public way.

Second, the rise of the Internet and social media have resulted in a culture of online attack that may increase investigators' fears of not only having their work not replicated but, more importantly, seeing their careers derailed. Such derailments

already are happening as a result of failures to replicate (Dominus 2017). Attacks in recent times, perhaps as a result of social media, have become much more personal, and scientists who might be able to withstand professional attacks may feel that they do not want to deal with the personal nature of some contemporary attacks. It is important to note that only a very small minority of scientists in this movement engage in these attacks, but even a few people can have quite an outsized impact. In a sense, the vitriolic and sometimes poisonous atmosphere of modern politics may be seeping into scientific discussion boards.

Third, the promotion of direct replications may send a message that creativity is no longer paramount in science. Certainly, there are other crucial components to scientific advancement; it is legitimate to argue that truth is ultimately more important than originality (Nosek et al. 2012). At the same time, it may be unreasonable to expect results to generalize to all populations at all times. As cultural shifts occur over time, results may change, especially in social psychology. For example, any result dependent on attitudes toward women, minority groups, or people with disabilities almost certainly will change over time. Many studies measure abilities, but even the nature of people's abilities may change over time (Greenfield *in press*). Perhaps investigators need better to specify in their original articles just how much generalization one can expect from their results (Simons et al. 2017).

Finally, there is a risk that individuals who otherwise might have become scientists decide to pursue other professions because they perceive the current atmosphere as intimidating or even hostile and that some people already in the field will move on to other fields because they view the current state of the field as one that just is not to their liking.

Simonton (1997) has proposed a model of creative productivity suggesting that scientific output varies over the course of a scientific career, usually decreasing as time goes on. Productivity may decrease for any number of reasons – increased administrative demands, one's running lower on

ideas within one's paradigm or paradigms of work, physical degradation, or whatever. Because the hit rate – that is, the rate at which a scientist produces work that has a high impact on his or her field – stays about the same over the course of a career, if productivity declines, so will creative hits.

According to Simonton's model as well as according to the actual data, all scientists, even the best ones, have failed ventures. The ventures may be based on faulty ideas, or in the case of psychology, they may produce data that do not replicate well. In the past, scientific failures were viewed as fairly routine parts of the enterprise. In today's environment, it is not clear that this rather benign view continues to hold. Many scientists and others today view replication failures, in particular, as quite serious. Because the stakes are high for a replication failure, it is hard to see how scientists would not become more cautious – indeed, that is part of the goal of the replication movement – leading to lowered productivity and, according to Simonton's model, a decrease in the number of highly creative hits. The question the field then would have to face is whether this possible decrease in creative productivity due to greater caution on the part of creative scientists is worth the price.

Obviously, there are advantages and disadvantages to any developments in science. But the question always is, when new practices are introduced into science or anything else, do their costs outweigh their benefits? That is something as yet to be determined. We as authors do not know the answer, and we suspect others are waiting to find out as well.

Increased Reward for Advance Forward Incrementation and Reinitiation

While psychology has seen an increase in caution, some fields have been experiencing a real push for innovation. The field of higher education in the United States has been under increasing scrutiny, and leaders have begun to call for change (Cavanaugh 2018; Davidson 2017). Great expansions in online education, once viewed with

skepticism, are now being embraced by many traditional institutions of higher education (Lederman and Lieberman 2019). Other issues highlight the pressure for innovation in higher education, including the increasing skepticism about the value proposition in higher education and the need for more employees in technical fields that typically do not require a 4-year degree (Kreighbaum 2018). In recent years, doctoral programs have been under pressure to mentor their PhD students to be prepared for alternative academic careers. As numerous factors converge on institutions of higher education, it is clear that the field that once rewarded the status quo will now demand innovation.

The reward for innovation is also apparent in the realm of primary and secondary education. In the face of various criticisms of the American public school system, increasing numbers of parents are choosing to educate their children at home. This can be viewed as a reinitiation, rejecting public and private education in favor of a personalized approach to education that permits a great deal of freedom in educational structure and content. Evidence that this radical response is being rewarded includes the growing number of children being homeschooled, from 1.7% of the school-age population in 1999 to 3.4% in 2012 (Redford et al. 2017). Whereas this is not a large proportion of school-age children, the dissatisfaction with public education resonates among a much broader population of families. This suggests that this creative approach will continue to be rewarded, and we would expect increased growth in homeschool communities and possibly also corresponding changes in public education.

Conclusion

Creativity can only be recognized in context: a specific time and place, an idea proposed by a particular individual in a particular field. Some creative contributions help us view the familiar in a new light. Others nudge the field a step further along a given path. Yet other innovations reject

the familiar and abandon the path and can start an entirely new field. In this chapter, we have argued that yet another aspect of the context for creativity is variable: the rewards for creative work (see also Amabile 1996). We urge creativity researchers and creators to consider how the context and its rewards affect their work and still strive for innovation whenever possible.

Cross-References

- Creative Inconclusiveness
- Creative Learning
- Creative Mindsets
- Creative Self-Efficacy
- Creativity

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Prospection

Roy F. Baumeister and Kayne Lim
University of Queensland, Brisbane, QLD,
Australia

Abstract

Prospection, also known as thinking about the future, is present uniquely in humans. Prospection allows us to simulate and predict future events, the emotions borne out of these events, plan for whether we want to head toward them or avoid them, and take appropriate actions to steer our future. In essence, prospection is a key part of what makes us human and is closely intertwined with the unlimited possibilities of the future.

Keywords

Planning · Pragmatic prospection theory ·
Mental time travel · Visualization ·
Predeterminism · Anticipated emotion ·
Forecasting · Optimism

Introduction

Prospection is the act of thinking about the future. The term was first coined by Gilbert and Wilson in 2007, in contrast to the term “retrospection,” which refers to thinking about the past. Many people think about the future; in fact, people tend to think about the future more than they think about the past (Baumeister et al. 2016). Examples of prospection can range from thinking about the options for dinner a person might have for the night, to contemplating the possibility of an afterlife, with the most common form of prospection being planning for the days, weeks, and months ahead. Furthermore, prospection assumes that the future is changeable rather than predetermined, as only with a matrix of possible, mutually exclusive outcomes can prospection bring about any meaningful change in behavior (Baumeister et al. 2018b).

People think more about the future, even though most of studying psychology has focused on the past. In natural science’s models of causality, the past causes the present which then causes the future, so studying the past would have been the most useful for identifying the causes of present behavior. However, as humans have the ability to use mental time travel to simulate future scenarios and contemplate their choices, thinking about the future is thus adaptive, and the usual models of causality do not capture the whole cognitive process (Seligman et al. 2013).

Biology of Prospection

In neuroimaging studies, task blocks are interlaced with rest blocks that serve as a control. During these rest blocks, when participants are not given any tasks, the area known as the default network would activate, named after the fact that this area (in the midline and lateral parietal lobes; Shulman et al. 1997) would be active when the participant was seemingly at rest, suggesting that this was the brain’s “rest” state (Raichle et al. 2001). Following further investigation, however, participants whose brains were in default mode were, in fact, doing something – they were found to be engaging in mental simulation (Buckner and Carroll 2007). Both prospection and episodic memory (transporting the self-back into past events) activated the default region of the brain, suggesting a shared neural infrastructure for both of these processes. The two are grouped together as mental time travel (MTT), termed as such due to the concept that the person would simulate events in the past (episodic memory) or in the future (prospection).

Episodic memory is often flawed. Memory is not like a USB disk where an image is burned permanently onto it and can be retrieved perfectly every time; rather, the brain stores the relevant information and reconstructs the memory every time it is retrieved, and during this process, the memory distorts. Memories change a little every time they are reconstructed (Tulving 2002). A possible reason for this flaw is the purpose of the default network in the first place. Rather than

evolving for the purpose of using episodic memory, it is likely that the evolution of the default network was to simulate and prospect (Schacter and Addis 2007). Indeed, the abilities for humans to use episodic memory may have developed as a “side effect” of this brain structure that evolved to prospect. Hence, episodic memory recall is flawed because retrieving memories was never the primary purpose of those brain structures. The ability to simulate multiple different possibilities, as in when humans prospect about the future, was the intended purpose, and this flexibility had the unfortunate side effect of corrupting the retrieval process of episodic memory.

A Uniquely Human Trait

In general, prospection in nonhuman animals is minimal or at best limited to learned expectancies extending just moments into the future. There may be a few exceptions (Clayton and Dickinson 1998; Roberts and Feeney 2009). Scrub jays, birds that cache food for future consumption, were argued to have “episodic-like” memory (Clayton and Dickinson 1998). Scrub jays preferred worms, which were quickly perishable, to peanuts, which could last longer. When allowed to forage for their food soon after caching, they searched in spots where the preferred worms were buried, but if they were allowed to forage only days after, they searched in spots where the still edible peanuts were and ignored the already rotten worms. The authors suggested that the jays were able to simulate that the worms had already rotted following the period of time that they were not allowed to retrieve their food, and hence demonstrated episodic memory. Suddendorf and Corballis (2007), while acknowledging that the scrub jays demonstrated memory of when the food was buried, disputed the conclusion that the scrub jays had episodic memory or were able to use MTT. The peanut-seeking behavior could be achieved with purely informational components, such as the time of burying and retrieval, the location of the food, as well as the instinctual knowledge that worms would rot after a period of time, without actually simulating and

anticipating the event of digging up worms that were rotten. At present, it seems that MTT and prospection are still mostly used by humans, bar very few examples in the animal kingdom. It is also noteworthy that scrub jays are genetically quite different from humans. Evidence for prospection in nonhuman apes is also limited, such as that some will occasionally take a tool from one location to another where it will be useful. An important limitation of even these findings is that the animal is in the same motivational state. That is, the hungry ape will take a stick along to dig for edible bugs at another locale. Humans may well be the only creatures who are able to imagine futures in which they will be in a different motivational/emotional state (such as saving money for the future, dieting, refraining from angry aggression or illicit sex based on anticipating that they will be sorry if they act on current impulses).

Of particular interest is evidence that only humans can mentally simulate the future as a “matrix of maybe,” that is, a set of alternative possibilities, only some of which will come true. Chimpanzees are our closest cousins in terms of biology and intelligence, but it seems that even they are unable to employ prospection to any meaningful extent. Redshaw and Suddendorf (2016) demonstrated this when they had chimpanzees and human children learn to catch a treat falling through an inverted Y-shaped tube, such that the treat could come out from one of two possible holes. Older human children (aged 4) immediately started covering both holes with each of their hands, ensuring that they got their treat every time. Younger children (aged 2) and chimps, however, kept choosing a single hole at a time, reducing their chances of getting the treat by half. Furthermore, in the event where some chimps managed to cover both holes, they reverted to using one hand afterward. This suggests that older human children are able to distinguish that there were two distinct outcomes by simulating the possibilities in the future and were able to act to maximize their reward using this simulation. Chimps, on the other hand, were unable to do so, instead only employing simple stimulus-response contingencies of sticking out

an arm to stand a chance of getting a treat. The discrepancy in behavior not only showed the intellectual requirements needed for prospection with only older children being able to employ it, but also demonstrated the adaptive utility of prospection – by anticipating multiple possibilities by simulating the future via MTT, older children were able to maximize their chances of success and, in this case, guarantee a treat every time. The ability to simulate future possibilities also creates a space for human creativity to operate in.

Affective Forecasting: The First Foray into Prospection

The term “prospection” was coined by Gilbert and Wilson (2007), in a paper examining affective forecasting, which refers to the expectation of emotional response to future events. People can “pre-feel” events that occur in the future by simulating these events, and the simulation produces shifts in their current emotional state. However, this process is flawed. Gilbert and Wilson posit that the accuracy of the “pre-feeling” is affected by the simulation of the event, as well as the contextual state that the person is currently in. If there are inaccuracies in the simulation, or if there are differences in the states in which the simulation and the actual event are perceived in, the “pre-feeling” will be inaccurate to a degree.

According to the authors, the inaccuracy can come about in four different ways. The simulation can be **unrepresentative** – an extreme example is used for the simulation, e.g., using the most unsavory oyster one has ever eaten as a basis for the experience of eating all future oysters (Morewedge et al. 2005). This skews the pre-felt disgust of having to eat an (arguably delicious) oyster in the future. The simulation can be **essentialized**, where only the most salient portions of future emotion are considered and supposedly irrelevant factors are dismissed, and the essentialization is more pronounced when the event is further in the future, with the result being a more polarized version of the actually felt emotion. For example, people often think that parenthood is all bliss, but fail to account for the lack of sleep, late

night awakenings and involuntary remodeling of property, and hence have an overly optimistic view of parenthood.

Next, the simulation can be **abbreviated**, meaning that the expected emotion only covers a short time frame, without accounting for hedonic adaptation; that is, that happiness returns to pre-event levels over time (Lykken and Tellegen 1996). Lottery winners are often overjoyed at the prospects of a sudden windfall (who would not?), but are later often plagued with problems like relatives asking for money and impulse spending. Along with hedonic adaptation, lottery winners generally do not remain happy for extended periods of time, but people still constantly overestimate the joys of winning the lottery (Brickman et al. 1978). Finally, the simulation can be **decontextualized**, where contextual factors are not considered. As an example, spaghetti for breakfast can be appealing to hungry people, while spaghetti for dinner can be unappealing to people who are full, even though spaghetti should usually be appealing for dinner and not for breakfast (Gilbert et al. 2002).

The above examples may seem to demonstrate that affective forecasting is a fundamentally flawed process and may even be counterproductive. After all, why bother pre-feeling the future if the simulation is inaccurate? To quote Gilbert and Wilson (2007), “Alas, actually perceiving a bear is a potentially expensive way to learn about its adaptive significance. . .” While the simulations may not be entirely accurate, they still are correctly predictive of the emotion felt in the future, and thus provide valuable information on the potential consequences of certain actions, guiding people to make (by and large) better decisions. Crucially, Gilbert and Wilson’s research into affective forecasting set the stage for further research into prospection, as it had established an umbrella term for thoughts about the future, which was not previously available.

Anticipated Emotion

It turns out that affective forecasting is important in prospection guiding human behavior, because

actual emotion rarely directly drives behavior, but anticipated emotion does (DeWall et al. 2016), and affective forecasting is a part of this process of anticipating future emotion. In a similar vein to affective forecasting, anticipated emotion is a process whereby people learn that certain actions produce certain emotions, and use these past emotions to guide future action (Baumeister et al. 2007), and evidence of this process has been increasingly found. For example, in research regarding relationship satisfaction, Baker et al. (2017) found that the driver behind current commitment was not current relationship satisfaction, but anticipated future satisfaction, suggesting that people were willing to commit to their relationship more if they expected satisfaction in the future, not in the present. For evidence of the importance of anticipated emotion in guiding choice, Damasio (1994) examined brain-injured patients with blocked emotional responses. These participants could generate possibilities for future events but critically were unable to choose among these options. While participants could prospect, their brains were physically unable to simulate the anticipated emotion associated with each option, and hence they were unable to make a decision about their course of action.

Sometimes people take actions that produce positive emotions in the near future but bring unpleasant ones later on. Indeed, the combination of short-term gain and long-term cost has been one of the most durable formulas for self-defeating behavior (Baumeister and Scher 1988). Smoking cigarettes, procrastination, and shy avoidance of social interaction are familiar examples. Indeed, people with self-destructive lifestyles may curtail thinking about the distant future so as to stay focused on the pleasures of the present. For example, addictive drug use cultivates immediate bliss at the expense of long-term damage to health, relationships, and well-being. In a well-known study by Petry et al. (1998), college students and heroin addicts were both instructed to complete a story about a man who work up and began thinking about the future. The students' stories extended 5 years into the future, in stark contrast to the addicts' 2 weeks (Petry et al. 1998). Similarly, in a task where

participants were asked to decide on a sum of money that they would get immediately to give up a larger sum of money in the future, smokers were willing to settle for less money in the present as compared to non-smokers and ex-smokers (Bickel et al. 1999). The smokers and heroin addicts were displaying a pattern of future discounting that suggested an avoidance of prospecting the anticipated outcomes of their current actions, enabling their self-destructive behavior to continue.

Optimism and Forecasting

Optimism and pessimism are, by definition, intimately concerned with thinking about the future. People who expect to succeed and thrive are optimists, while people who expect to fail and spiral are pessimists, the key being expectations about their futures. In general, optimists tend to have better life outcomes than pessimists in a number of areas. Optimists tend to be healthier (Peterson et al. 2012), with decreased likelihood of developing diseases such as stroke, depression, and cardiovascular disease, as compared to pessimists. Optimists also tend to have higher psychological well-being than pessimists, being less stressed, lonely, and depressed (Scheier and Carver 1992). Despite these findings, optimism or pessimism may be a side effect of circumstance rather than an innate trait, in that people in favorable circumstances generally feel that they have more control over their actions and are likely to proceed favorably in life, as compared to people in less fortunate straits (Scheier et al. 2001), and people who are in favorable circumstances generally end up with better life outcomes. As such, a direct causal relationship between optimism and better life outcomes cannot be readily established.

As in affective forecasting, people's expectations of their own futures are also flawed to an extent. Two well-known biases are the optimism bias and the planning fallacy. The optimism bias refers to a systematic belief that one is less likely than others to encounter unfortunate events, and this belief is pervasive across ages, culture, and gender (O'Sullivan 2015). The bias arises partly

as a result of the illusion of having more insight into oneself than others have about themselves, giving them a greater sense of control of future events than other people (Harris 1996). The illusory increase in control leads to an underestimation of the likelihood of negative events happening to themselves. For example, smokers who think they are taking adequate precautionary measures to avoid lung cancer are likely to ignore the fact that many other smokers are also taking these measures, and yet still fall prey to lung cancer (Shepperd et al. 2002), resulting in an underestimation of the possibility of themselves getting cancer, as they feel more in control. As a result of this bias, people think they are less likely to fall ill, be retrenched, or crash while driving, and thus are unlikely to pursue the best course of action; smokers are less likely to quit smoking, drivers are more likely to drive drunk after a night out, and randy teenagers are more likely to have unprotected sex (Weinstein and Klein 1996): “It won’t happen to me.”

The planning fallacy, on the other hand, refers to the tendency to be overly optimistic when evaluating the amount of time and resources needed to complete a specific project (Lovallo and Kahneman 2003). The fallacy arises for similar reasons as errors in affective forecasting: people rely only on the most optimistic version of their forecasted progress and discount the seemingly irrelevant factors that could possibly delay or thwart progress on the project (Buehler et al. 2002), which could include procrastination, technical issues, or even general world events, such as the ongoing Covid-19 pandemic. This phenomenon is widespread, and even when people are explicitly instructed to consider possible obstacles to finishing the project on time, the amount of time needed to complete the time is still underestimated by a fair amount (Buehler et al. 1994). The consequences of underestimating a project are obvious: people promise things that they cannot realistically deliver, and result in stress, substandard work, and possibly even financial consequences. As an extreme example, by 2014, the next-generation F-35 Lightning II jet aircraft was considered 7 years behind schedule, and a whopping USD\$163 billion over budget (Dursch

2014). As a result, there was considerable negative publicity about both the manufacturing company Lockheed Martin, as well as the Pentagon. Both the optimism bias and planning fallacy can be considered flaws of prospection, as they reduce the accuracy of the forecasts about the future and lead people to make suboptimal decisions.

However, forecasts about the future can be made more accurate. Phillip Tetlock and Barbara Mellers, along with their team of researchers, showed as clear evidence for this as possible within the social sciences (Tetlock et al. 2014). During their so-called Good Judgment Project (GJP), the team of researchers took part in a geopolitical forecasting tournament hosted by the Intelligence Advanced Research Projects Activity (IARPA), pitting themselves against four other university teams in a contest of accurate predictions about political and global events. They recruited a team of 2,800 volunteers, and over the course of the 2 years in the tournament, tested 3 intervention methods to improve prediction: training, teaming, and tracking. Over the 2 years, they found conclusive evidence that a 45-min probabilistic training package improved the understanding of probable future events and facilitated the generation of new possibilities, and this translated into an increase in accuracy for trainees, over participants with no training. Teams of participants were also more accurate than individual participants due to the sharing of information and hypotheses, despite some well-documented group phenomena that hampered group performance like groupthink or social loafing (Esser 1998; Latané et al. 1979). Finally, as the study was conducted over a 2-year period, participants who performed the best were grouped together as “superforecasters” in the second year, and this group of superforecasters outperformed even expert forecasters with access to classified information (Mellers et al. 2014). Through the results of this study, Mellers and her team demonstrated that an improvement in forecasting the future was possible with any of their three interventions, and they were so successful (to an advantage of over 70% against the competition; Tetlock et al. 2014) that IARPA called off the competition after the first 2 years. In their book about the GJP, Phillip

Tetlock and Dan Gardner (2015, p. 51) also noted that individuals who tended to perform the best were “open-minded, careful, curious, and—above all—self-critical,” with certain personality traits being correlated to more accurate prospection. The discovery of effective interventions for more accurate forecasting means prospection can be improved, and the biases mentioned above can be overcome given the right circumstances.

Planning and Pragmatic Prospection Theory

Recent thought-sampling data found that when people report thinking about the future during daily life, three-quarters of such thoughts involve planning (Baumeister et al. 2018a). Planning is a mental activity in which the person formulates a series of actions to reach a desired outcome (Sjåstad and Baumeister 2018). Proper planning has been linked to a host of benefits, enabling goal pursuit and keeping distraction at bay (Gollwitzer 1996), and therefore allows for positive outcomes, be it to obtain groceries the next day or lose weight over the next couple of months. One of the main forms of planning is implementation intentions, and take the form of if-then contingencies: “if I encounter scenario X, I will perform action Y” (Gollwitzer 1999). While appearing simple and straightforward, this form of planning is very effective. Students asked to come up with implementation intentions for starting an exercise actually did start exercising, compared to students who were simply motivated – they did not start exercising more (Milne et al. 2002) – and people went for their flu shot much more when they had made implementation intentions as compared to when simply given information about the clinic (Milkman et al. 2011).

Another form of planning is process simulations, during which a person thinks about achieving their goals and generates the sequence of steps they would have to take to reach those goals (Taylor et al. 1998). This type of planning is effective in improving performance too, as people anticipate the types of actions needed and possible obstacles to achieving their goal, providing an effective strategy to achieve their goal. Outcome

simulation, on the other hand, which involves just simulating already having completed the goal, is not effective in promoting meaningful action towards goal completion (Kappes and Oettingen 2011), as simply imagining goal completion may actually reduce motivation to achieve that goal instead, while not producing any actionable steps.

In a similar vein to William James’ assertion that thinking is for doing (Fiske 1992), Baumeister et al. proposed that thinking about the future is typically a preparation for future actions and choices, in what they named pragmatic prospection (Baumeister et al. 2016). In their theory of pragmatic prospection, they argue that prospection is a two-step process. First, one first visualizes a certain goal in an optimistic manner, and at the same time generates the anticipated positive emotion as a result of achieving said goal. Afterwards, in a turn towards realism, they then generate possible negative outcomes and obstacles that would prevent them from reaching that goal. Taken together, these two steps allow a person to visualize and plan a course of action to achieve desired outcomes, while accounting for possible obstacles.

The steps occur in this order as there is first a need to discern what is desired before exploring what is undesirable. Furthermore, as the first step alone would not be enough to spur meaningful action (Kappes and Oettingen 2011), the second step is necessary to ensure that the person takes appropriate action to reach those goals. Anticipated emotion plays a part in this second step as well, letting the planner know which situations could potentially be hampering goal pursuit and which actions to take to avoid them. Furthermore, plans that are meaningful to the planner are more effective than others at achieving the goals set out by the planner (Koestner et al. 2002), because plans made in relation to one’s personal values would be more easily adhered to: “I was the one who wanted to make this diet happen, because I wanted to become healthier.” Plans that use one’s own actions as a trigger for future action are also more effective in ensuring action, as people who are involved in the flow of events of their plan rather than going off propositional factors like clock time are more likely to feel happy in control

of their lives (Sellier and Avnet 2014), adding to meaningfulness' importance in prospection – “After brushing my teeth, I will go to sleep” is more effective than “At 11pm, I will go to sleep.”

It is worth noting here that the future is seen as a “matrix of maybe” by the prospector (Baumeister et al. 2018b). The term means that the future is not seen as predetermined – as a series of events sure to occur – but rather a series of time points where the prospector's actions would change the flow of events and therefore result in different outcomes. From the viewpoint of pragmatic prospection theory, the idea of pre-determinism is untenable, as if prospection were about predicting events that would happen for sure, planning in itself would be meaningless, as the actions taken would not alter the outcome of events. However, as people routinely still generate action plans for events that have yet to happen, a pre-deterministic outlook on the future can be dismissed. Combined with the evidence found for anticipated emotion guiding action and the proportion of future thoughts that involves planning, the notion that prospection in general is innately involved with action to ensure better future outcomes is well supported.

Cross-References

- Anticipation
- Creativity
- Determinism
- Emotion
- Forecasting
- Foresight
- Imagination
- Possibility Thinking
- Possible in Psychology
- “What If” Thinking

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Psychopathology

Erik Mansager¹ and Rocky Garrison²

¹Webster University, Geneva, Switzerland

²Adler Graduate School, Minneapolis, MN, USA

Abstract

This entry provides an overview of the field of psychopathology – including the theoretical and clinical *study* of an individual's abnormal psychological thoughts, feelings, and behaviors (symptoms) as well as the personal *expression* of such manifestations. The first section is a general discussion of the field of study, outlining the ongoing concerns for the limits of nomothetic vs expressive, idiographic psychopathologies. A contemporary history of the field is sketched revealing these conflicting approaches and the place of objectivity, subjectivity, and their resolution into simultaneous presence. Then the main theoretical constructs in this history which have risen to prominence are put forward as the structure of current

psychopathology. The entry concludes by arguing that the relevant constructs are found in both a foundational manner in Alfred Adler's Individual Psychology and therein they play a synthesizing function in the application of psychotherapy today.

Keywords

Abnormal psychology · Personality disorder · Neurosis · Psychosis

Definition

The traditional etymological structure of “psychopathology” offers an intriguing first sense of the word: psyche / pathos / ology → the mind's / suffering / under study conditions. The scholarly definition provided by a national psychological association, however, captures two central characteristics that will be covered in this entry:

1. The *scientific study* of mental disorders, including their theoretical underpinnings, etiology, progression, symptomatology, diagnosis, and treatment. This broad discipline draws on research from numerous areas. The term in this sense is sometimes used synonymously with abnormal psychology;
2. The *behavioral or cognitive manifestations* of such disorders. The term in this sense is sometimes considered synonymous with mental disorder itself (APA 2015, <https://dictionary.apa.org/psychopathology>, italics added).

Introduction to Current Psychopathology

Correctly implied in the brief definition above, psychopathology is an enormous field of research that assesses thoughts, feelings, emotions, personality, and experiences of individuals, groups, and communities in their abnormal manifestation. Concise categories, however, cannot capture the activity involved in attempting to understand and explain human beings – well or ill. While categorization of the abnormal is a well-acknowledged

phenomenon within the field of psychopathology, persistent efforts to delineate the meanings and objectives of psychopathology without seeing its relationship to mental health are difficult or impossible. To look at behavior and diagnose it as abnormal will have either an acknowledged or unacknowledged concept against which the abnormal is being measured. It is like trying to define one end of a continuum with no awareness of the other end. This problem pervades psychopathology even currently and will be traced through the field's development.

Contemporary psychiatric authors strive to make psychopathology both useful and precise by developing a consensus that promotes the essential functions of psychopathology. The number of functions vary in the literature but typically include at least four proposals for psychopathology's chief purposes: (1) it is descriptive, in that it attends to the phenomenological experience of the person suffering psychopathology; (2) it is clinical in its linking the phenomenological with the classification (nosology) of psychopathologic experience; (3) it is theoretical by stipulating the foundational causes (etiology) of the psychopathologic experience; and (4) it is structural in its efforts to expose the meaningful coherence of psychopathologic experience (e.g., Cutting 2012; Schultze-Lutter et al. 2018; Stanghellini 2009).

Taken together, these specific functions of psychopathology give some breathing space to the main definition's focus on psychopathology as *scientific study* and *behavioral or cognitive manifestations*. The study of psychopathology includes explanatory aspects such as nosology and etiology and the behavioral manifestations themselves involve understanding aspects such as empathic observation of the suffering individual and concern for the meaning of the suffering for that individual. Studying the manifestations and observing them within living beings can unearth connections between and among (1) experiences, (2) categorizations, (3) causal foundations, and (4) meanings of psychopathology – all of which aim at healing the sufferer. In this way, we can say the study and observation of

psychopathology generates the possibility of psychotherapy.

This healing possibility, as will be shown below, is implied all along the development of the discipline: from the coining of the term “psychopathology” (Emminghaus 1878), through that term being first comprehensively organized as human maladaptation (Janet 1938), and its direct appeal at understanding along phenomenological lines (Jaspers 1913). Yet, throughout its history, the study and observation approaches have clashed with the experiences of the suffering individual. That is to say, the sufferer has to some degree been neglected in studying the suffering. Up until the present discussion, the “newer and better” nosology attempts have objectively suffered from both reliability and validity issues (Kotov et al. 2018; Ross and Margolis 2019). Subjectively they have been distrusted by the lay public for overlooking the human person for whom they purport to be concerned (Davis 1997; Spiegel 2005).

Study approaches can consider both etiology (source of the psychopathology) and pathogenesis (development of the psychopathology), but when such models are applied wholesale to the workings of the mind, they lead to manageable-enough general classifications of symptoms, but when considering individual, unique human beings normal and abnormal are hard to determine. That is, when the human subject is conceived within a narrow, causal model for diagnosing illness, the model pays little attention to the phenomenology (subjectivity) and teleology (purpose) of the psychopathological experience (see Andreasen 2006). The treatment of *mental* abnormalities as diagnosable via a medical model that treats *physical* illnesses has given rise to an ongoing “critique of psychopathology” (Cutting 2012). In his own thoroughgoing critique, Cutting sees philosophical consideration as *sine qua non* for understanding the suffering individual which for him already involves functional (psychological) and organic (neuropsychological) analyses.

Schultze-Lutter and her colleagues (2018) concur, while expanding considerably the differentiated psychopathology approaches needing to cooperate on “equal footing” if science is “to

succeed in understanding the underpinnings and mechanisms of mental disorders.” They emphasize not only psychiatry, psychology, neuroscience, and philosophy, but genetics, epidemiology, computer science, and mathematics as well (p. 4), concluding that “contemporary research and clinic in psychiatry do not need less but rather more differentiated psychopathologic approaches in order to develop approaches that integrate professional knowledge and patients’ self-experience” (p. 5).

So, the critical approach to psychopathology prevalent today reveals an interdisciplinary perspective making it far more compatible with the “both/and” orientation of possibility studies. As this article unfolds, it includes appreciation of both the study approach *as well as* openness to observing the experience of suffering individuals. It attends to etiology but re-emphasizes the utility and benefit of teleology; it recognizes salient pathogeneticists but underscores phenomenological experience and the importance of the individual sufferer.

Following from the definition of psychopathology, both the study of psychopathology for classification purposes and observing and empathizing with the suffering individual are now addressed. The overview of classification concerns is interwoven with the growing possibilities for practical understanding of mental suffering as they emerged from the early frustration of how to apply early psychopathological knowledge to healing endeavors.

Contemporary History of Psychopathology

Psychogenesis vs Phenomenology

Before large organizations began sharing information and gathering it into classification systems, came the initial attempts to explain what was entailed in psychopathic behavior, what separated it from that of everyday lives, and notably, what might be done about it. The first professionally organized attempts at encompassing anomalous behavior was made by the World Health Organization (WHO) at the turn of the 19th to

the twentieth century. In 1900 it first developed a taxonomy of illness and causes of death (Zavoronkov and Bhullar 2015). It was nearly a half century later in 1948 that WHO offered its first definition of health (Huber et al. 2011) – which was revised in 1984 (*World Health Organization (WHO) Definition Of Health – Public Health*). One hundred and twenty years after its inception, WHO is currently developing the 11th edition of its International Classification of Diseases (ICD-11). Notably, the ICD-10 already includes 11 categories into which 200+ distinct mental disorders, psychopathologies, are classified.

At the same time as and alongside classification efforts by the WHO, an attempt was developed for explaining psychopathological behavior with the aim to cure it. In 1902, the budding psychotherapeutic discipline of psychoanalysis came into existence under the guidance of **Sigmund Freud** [1856–1939]. He gathered with three colleagues to begin discussing a promising treatment for human mental suffering. Suffice it to say for now, that psychoanalysis initially distinguished the severity of mental disorders by a three-way designation: psychosis, neurosis, and perversion (Laplanche and Pontalis 1973). The initial prognoses of such disorders intended to delineate the curability of each and to identify which were amenable to therapeutic (psychoanalytic) intervention (Freud 1910/ 1957).

Psychopathology’s development eventually drew psychologists’ attention to differentiating between thoughts, attitudes, and actions that hurt oneself and those that hurt others. The former retained the moniker, psychopathology. **George Partridge** [1870–1953] worked to clarify the latter issue, harming others, as involving the greater community (Partridge 1930). This evolved as the originally separate discipline of sociopathy (Whitlock 1987).

These early-modern attempts to organize psychopathological disorders are part of a long continuum of human attempts to explain and understand human foible. In a broader context, psychology itself is a name given to the oldest attempts at grasping motivational forces of individuals along with differential aspects that separate humans from other animals. Egyptians,

Greeks, and later religions all sought to conceptualize the animating force of humanity. It is from them that designations of the terms “soul” or “psyche” gained philosophical currency. In this, psychology lagged behind the scientific curve in its development even until the eighteenth century, when the natural sciences blossomed. Early psychological understandings of the person, or of nature, were active among that century’s philosophers, among whom **Immanuel Kant** [1724–1804] was exemplary. His was among the early, grand attempts at understanding human motivation. With the influence of his *Critique of Pure Reason* (1781), psychology would ultimately be considered a scientific undertaking at the close of the eighteenth and beginning of the nineteenth centuries. This was a long and arduous road toward scientific acceptability that would finally be acknowledged with the 1890 publication of *Principles of Psychology* by **William James** [1842–1910].

That philosophy first came in the form of the materialistic philosophy of the time, which insisted that everything could be explained by biochemical processes. The brain was considered something of a modified mechanical organ – not unlike the eye, with its particular functions characterized accordingly. So, the original aim of a scientific psychology came to be the explanation of all behavior by mechanical principles. While of great interest to the growing scientific community, an *explanatory* approach did little to help *understand* either healthy or pathological mental life. These two perspectives would struggle with one another throughout the history of psychology.

Objectivity of Scientific Psychopathology

In the early 1800s, as natural science took center stage among intellects of the day and psychology was drafted into a scientific niche, treatment of psychopathological patients was consigned to institutions. Scientific growth of psychology notwithstanding, humane treatment of the individual sufferer would begin in 1793 when **Philippe Pinel** [1745–1826] was able to enact human reforms for his patients at the Salpêtrière and elsewhere in France (Elkes and Thorpe 1967). Certainly, science was making advances on many fronts.

Biochemistry could well explain individual activities such as enzyme activity and metabolism yet could not explain the maintenance of integrity – that the whole *precedes* its parts. Organisms, it seemed, were a unity whose parts are subordinated to the laws of indwelling purposiveness (Wexberg 1929). For the first time, alongside the etiological (cause-effect) approach, the teleological view (goal-orientation) was reintroduced. Purely mechanistic explanations, while still working somewhat in biology, were not only faltering there but no were no longer sufficient in psychology.

It was **Gustav Fechner** [1801–1887] who first developed a physiology of the senses. His approach was to develop divisions of psychic mechanisms into a catalogue of physio-psychology, namely, sensations, imaginations, feelings-emotions, will-desires, and so on. This was a revolutionary approach to the brain, yet try as they might, scientific attempts to apply this information to the complex behaviors of the mentally ill were failures.

It seemed that Fechner and his disciples could not satisfactorily explain subjective aspects of the individual. His physio-psychology (Fechner 1869/1966) was primarily speculative and remained sterile regarding classification of mental phenomena that helped deal with psychopathological behavior. As important as his Weber-Fechner law was (the observation that just-noticeable differences between two phenomena is in constant proportion of the original stimulus),¹ it had little practical utility for teachers and physicians who needed practical application of psychological information. Further, anecdotal efforts at understanding human nature were attempted, but the available intuitive understanding of human behavior could not produce replicable insight. Some level of organized scientific method was needed, and the scientific, mechanistic *explanations* of physio-psychology were proving unsuccessful. The sought-after

¹ More formally stated by Fancher 1996, that the stimulus must increase geometrically if the intensity of a sensation is to increase arithmetically.

fully-psychological *understanding* of human behavior was yet to be formulated.

Subjectivity of Scientific Psychopathology

As medical treatment grew in importance, however, so did issues of mental pathology and the stimulus to understand behavior was to come from this newer focus on psychopathology. A small but determined number of researchers produced a shift away from physio-psychology and toward fully psychological explanations for the psychological problems. **Jean-Martin Charcot** [1825–1893] was experimenting with hypnosis as it related to hysteria – which was still considered a brain phenomenon. At the same time, **Hippolyte Bernheim**'s [1840–1919] use of “suggestion” – controversial as it was (see Ellenberger 1970) – posited the first recognized *psychological*, non-material motivation for behavior.

Having been a university assistant for **Carl Gerhardt** [1833–1902], an early leader in pediatrics, **Hermann Emminghaus** [1845–1904] is responsible for using the term “psychopathology” probably for the first time in his publication of *General Psychopathology as an Introduction to the Study of Mental Disorders* (1878). **Emil Kraepelin** [1856–1926] filled the chair of psychiatry that Emminghaus vacated in 1886 and devoted himself to revising the psychopathology classification system current in his day. Kraepelin focused not just on major psychopathological symptoms but to the patterns of symptoms (syndromes). Both Emminghaus and **Pierre Janet** [1859–1947] broke new territory in understanding developmental aspects of psychopathology. In assembling the first comprehensive explanation of psychopathological behavior (see Ellenberger 1970, pp. 386–394), Janet advanced the first therapeutically workable psychopathology theory. He observed individuals who experienced “splitting of the personality” (dissociation) that he believed was caused by dynamic emotional excitation. He described this as “psychic automatism” – acts carried out mechanically without awareness. He described it as if the suffering individual were experiencing two souls living in a single body. Thus, he formulated the system in

which an “unconscious” state was opposed to a “conscious” state.

Given Emminghaus' coining of the term in 1887, broad use of the term, “psychopathology” is most frequently attributed to Karl Jaspers and his 1913 publication of *General Psychopathology. A guide for students, physicians, and psychologists*. It was his insistence that suffering individuals be attended to especially in their self-expression of psychopathological experience. “Since we never can perceive the psychic experience of the other in any direct fashion, there has to be an act of empathy. Our chief help in all this comes from the patients' own self-description” (Jaspers 1913/1997, p. 56). At this point in its development, the cause for pathological mental phenomena was no longer seen as related solely to brain mechanics. Rather psychologists were dealing with an “unconscious” which eluded mathematical or chemical proofs. It could best be understood via professional interpretation. Thus, the hypothesis of dissociation between conscious and unconscious grew in favor and displaced consciousness as the primary seat of human behavior.

Wilhelm Dilthey [1833–1911], although considered to be an empiricist by many, brought out the importance of a first-person oriented “understanding psychology.” Within the movement to develop a working psychopathology model, his approach opposed the prevalent third-person oriented “explaining psychology” which intended primarily to make the psychopathological conditions graspable and able to be shared and discussed objectively among concerned professionals. Dilthey's intentions were broader – he aimed to make the findings of mental aberrations understood from the perspective of the clients. Thus, helping professionals could focus on the individual's specific suffering. This was specifically what the physiological, explanatory psychology had not been able to accomplish.

Dilthey represented the shift from solely objective data to a conceptualizing which included phenomenological data. Rather than the once prevailing physiology's focus on only objective material, now subjective experience was cautiously admitted. Knowing that stand-alone

physiology had not worked and that a practical/usable psychology was needed, scientific exactitude, explanatory psychology, was by-and-large relinquished.

A culmination of understanding psychology was represented by **Edmund Husserl** [1859–1938] and his phenomenological approach. His “essential immanence” emphasized the indispensable unity and totality of immediate experience for understanding psychopathology. The consequence being that Fechner’s older efforts at cataloguing experiences appeared as artificial divisions.

Also at that time, biological science was evolving away from materialism as the pure physiology model of nineteenth century. So, while psychology’s original aim was to explain all mental activity by mechanical principles – with its failure on the physiological level – biochemistry as the familiar partner of mechanistic physiology began pointing in another, relativistic-biologic direction. Escaping this irrelevance, biochemistry better and better differentiated living from dead matter and, as a result, scientific interest turned to investigating living material. These investigations produced questions more fundamental to human life; those about organic material and about its biological phenomena, for example the process of regeneration in nature (e.g., tapeworm survival after vivisection) and the healing process in general. What grew to be a revolution in biology joined phenomenology in conceptualizing organisms as unities. As Smuts (1926) had conjectured philosophically and Goldstein (1934/1963) contended neurologically, maintenance of the integrity of the whole cannot be deduced biochemically. Each tissue and every organ seem to follow a law of the total organism.

At this point in psychopathology’s development the default for understanding maladaptive mental symptoms was no longer physiopsychological à la Fechner and other like-minded objectivists. Rather than brain malfunction, it was conjectured mental symptomology that might have its own meaning and purpose – at least to that organism. Psychopathologists were drawn to inquire under what circumstance maladaptive symptoms make sense. Taking a lead from the

newly invigorated biological sciences by speaking of “organism unity,” psychopathologists began to conjecture about unity within the personality. Still, “dissociative states” (Janet) and “psychic conflicts” (Freud) remained inexplicable and stood as a seeming contradiction of a unified personality. However, the more that was learned about *biochemistry*, the clearer it became that human behavior, normal and abnormal, would not be solved by finding a physicochemical formulae for organic activities.

Biochemistry, ultimately, could explain neither corporal nor mental vitality. If dreams and neurotic symptoms were not the result of biochemistry (i.e., imperfect brain functions), the question of “purpose” – something following an internal guide toward a discernable end – gained importance. Three influential psychologists more or less simultaneously offered their understanding of human purposive activity and its unique, phenomenological manifestation in individuals: from the depth psychological vantage point **Alfred Adler** [1870–1937], in his *Individual Psychology* (i.e., individual from German [and Latin] *individuum* implying an indivisible entity) posited an unconscious, fictional goal as the unifying element (Adler 1912/2002); from the individualistic developmental perspective **Wilhelm Stern** [1871–1938], within his *Personalistic Psychology* (Stern 1938) posited that the teleological nature of the individual accounted for the individual’s differences from other individuals; and **Kurt Goldstein** [1878–1965], from a psychopathological emphasis via his comprehensive, systems focus on “the organism” (Goldstein 1934/1963) illustrated the purposiveness of behavior as individual organisms striving toward actualization of the organism’s nature.

Objectivity vs Subjectivity in Scientific Psychopathology

Yet, the general acceptance of the phenomenological would occur only after struggling with and digesting such subjective phenomena as “dissociations” and “psychic conflicts.” The upshot of greater attention to such occurrences, however, did not immediately increase a search for understanding. Instead, it seemed to reinvigorate the

explanatory impulse, for an objective psychological science. Early interaction of behavioral psychology, in the form of reflex theory, made its claim to objectivity by ignoring the subjective and claiming it simply did not exist. Enter **Ivan Pavlov** [1849–1936] and **Vladimir Bekhterev** [1857–1927], professional competitors on a theory of conditioned reflex, and **Edward Thorndike** [1874–1949] who adapted the reflex theorists' notions and principles to learning theory. Even the response notations among these major influencers (*P R* = *perception* followed by *reaction*; *S R* = *stimulus* followed by *response*) ignored the human, subjective factor (*S O R* = *stimulus* followed by **organism** followed by *response*).

John Watson [1878–1958] incorporated such themes into his broader development of behaviorism and a comparative method of applying to humans what had been applied to animals. The behaviorist researchers and theoreticians carried out classical observations and experiments with a pledge to ignore or deny the subjective side of the results. This drive for objectified psychology and its therapeutic application culminated in **Burrhus Frederic Skinner** [1904–1990] and the behavior modification phenomenon. To provide ascendancy to an objective psychology, behavior modification asserted objective reasons for subjective phenomena it tracked, largely explaining such phenomena as self-deception (Skinner 1948, 1971). The effort held sway in psychology and psychopathology for several decades, but also provoked resistance that set a perpetual stage for a new subjective approach to psychology.

By his own standards, if not by those of behaviorism, Sigmund Freud also lent a hand of sorts to the quest for an objective psychology. He came to explain subjective behavior by developing several of what he considered “objective criteria” among his psychoanalytic concepts. He reworked Janet's dissociation of personality to be understood as the expression of the personality within that individual's conscious and unconscious systems (Wexberg 1929). This system freed Freud to focus more on the content of therapeutic observations, rather than gathering the content together in

categorical forms. By seeking causes within the *unconscious* content (patients' expressions), he believed he had established laws of explaining how abnormal outward, *conscious* conduct derived from *unconscious* activity of the mind.

In this sense, for the first time, a framework of psychopathology (*qua* psychoanalysis) was able to provide psychologically determined explanations for psychological occurrences. For example, “slips of the tongue” (a categorical form of psychic activity) were no longer explained by brain fatigue but were seen as linked to painful or unpleasant memories (the content of specific psychic activity). Freud believed he had found the bridge between subjective and objective psychology. He likely maintained this belief even as his later writings became more speculative and narrative – exemplified by his *Moses and Monotheism* (Freud 1964/1939). Therefore, it was only in the last decade of the nineteenth and dawning of the twentieth centuries that wholly psychological interventions, rather than physiological interpolations, were applied to dealing therapeutically with psychopathological behavior (Ellenberger 1970).

Thus, the nucleus of the dynamic individual was found in psychological movement which could produce mental activity to accomplish some purpose of the individual. This is the undisputed, noncontroversial contribution of Freud – despite many controversial positions he took on the etiology of psychopathological behavior over his long career of developing psychoanalysis (Sulloway 1979). As the subjective-objective groundwork took root, the first half of the twentieth century gave rise to the flourishing of three grand theories of psychopathology and psychotherapy: Psychoanalysis (Freud); Individual Psychology (Adler) and Analytic Psychology (**Carl Gustav Jung** [1875–1961]). All of these stayed intact and operative despite technological advances (Munroe 1955), an onslaught against phenomenology initiated by behaviorism, the rise of evidence-based medical and psychological standards of practice, as well as the contemporary burgeoning of neurobiology and neuropsychology following “the decade of the brain” (Jones and Mendell 1999).

Summary of the History of Psychopathology

Once the long wait for applied, effective psychologically pertinent interventions was ended, the would-be practitioners – physicians, clergy, educators, and other professional helpers – had at their disposal an approach to relieving the suffering shaped by psychopathological thoughts, feelings, and behavior. The long wait involved its own dynamics, fostering the evolution of a puzzling number of old and new psychopathological anomalies and the ability to address current issues (e.g., “war neurosis”) in new ways. It was not just the therapeutic techniques that changed, but the nomenclature surrounding such maladies. Dementia praecox, neurasthenia, hysteria, and the like all developed more specificity as the therapeutic interventions (medicinal and interpersonal) were found incrementally more effective.

By mid-twentieth century the booming psychotherapeutic response linked to the improvement of psychopathology saw the rise of other theories (e.g., humanism, cognitive-behavioral therapy) and still later, over 200 separate approaches to treat the most frequently occurring maladies of the given decade. Remarkably few of the theories and techniques developed their own expansive theories about the nature of the human being. What **anthropologies** existed – Freud’s psycho-sexual approach, Adler’s psycho-social approach, and Jung’s psycho-spiritual approach – addressed the most varied human characteristics, articulate human development over the evolution of the species, and could be applied with the intention of healing the widest variety of maladaptive behavior encountered today. Each of the 200+ newer approaches rely on one or the other of the three foundational psychopathological-psychotherapeutic models for their basic outlook on which is constructed the new, specific technique addressing the problems at hand (see Ehrenwald 1976).

Questions arise about the actual theoretical characteristics of today’s therapy models and whether they utilize anthropologies that are a combination of the grand three or are otherwise constituted. This is a complex enquiry that touches on the entry’s opening concern about *scientific study* and *behavioral or cognitive*

manifestations. Still, the most important issue for the field of possibility studies – shared by the major critiques of the psychodynamic approaches (Munroe 1955; Glover 1950; Holt 1989; Jacoby 1975) – is the ability of any theory to synthesize a vast amount of current scholarship about the nature of psychopathology, to provide a coherent understanding of it, while maintaining an eye toward individual healing. This concern is addressed in the following section.

Theoretical Constructs of Current Psychopathology

What then are the philosophical/theoretical characteristics that form a basis of existing psychopathology and psychotherapy? What can be gleaned from the previous perusal of history? There are at least four broad characteristics that prevail today and have been part of the development of psychopathology since Emminghaus’, Jaspers’, and Janet’s insisting that the experience of the suffering individual be the focus of any system that aims to explain *and* understand such mental suffering. Alongside these characteristics – phenomenology, holism, teleology, and social embeddedness – there is a striking absence (avoidance?) of what is meant by mental health. The common characteristics will be described here before offering evidence of their ubiquity in today’s therapeutic milieu which by-and-large, despite current psychopathology practices, subscribes to a model of wellness in providing psychotherapy.

Phenomenology has been brought forward as a necessary condition for a valid psychopathology throughout this entry. Due primarily to the influence of Karl Jaspers, psychopathology and psychotherapy today focus on the structures of individual experience, or consciousness – both in its aberration and its healing. Literally, phenomenology concentrates on things as they appear in the patient’s experience and provides meaning to things within that experience. This definition alludes to other closely related psychopathological strata, such as the *subjective* nature of one’s own mental activity giving rise to an individual experience rather than one that is shared or

communal, with little adherence to or awareness of an external, objective truth; an *idiographic approach* to life which gives credence first to the subjective nature of uniqueness over and against a generalizable outlook being considered preeminent; and an *existential* starting point of the experience, viewing the human subject not merely as thinking, but as a living (thinking, feeling, and acting) and vulnerable human individual.

Holistic experiencing of reality is another characteristic of current psychopathology/psychotherapy assessment and interaction. The originator of the concept of holism, Jan Smuts (1926) described the holistic perspective as life consisting of various interacting systems (e.g., physical, biological, social) each of which are whole and function unto themselves. Simultaneously they are also part of larger interactive wholes that join force to accomplish activities which the separate systems cannot attain.

Teleology, once disregarded as merely a philosophical perspective, is appreciated in psychopathology as an understanding of behavior as a function of its end, purpose, or goal. Within psychopathology it contrasts with etiology which references the psychogenetic cause of a malady. Teleology and etiology are understood today to be inseparable aspects of how a sickness starts and what course it naturally runs. The advantage of a psychological understanding of teleology is that it provides consideration of the cost–benefit ratio of so-called secondary outcomes that manifest in the psychopathologic experience. At the same time, the future orientation emphasizes the possibility for healing within that future – and so is coupled to issues of *wellness*.

Social embeddedness of individuals is being newly affirmed in neurological imaging, notwithstanding the subjective and individual *experience* of life. Now given credence in interpersonal neurobiology as the “mirror neuron” system is studied and understood, being wired for connection with others (Siegel 2020) helps grasp what is regularly manifested in family and community structures. Allusions have been made throughout history of the dignity of the human person in fellowship with others that it is not tenable to postulate society as if it confronts the individual. The individual *is* social

being; individual human life and species life are not different things (Adler 1994).

While these four characteristic ways for perceiving reality contrast mightily with the perceptions of the pathologically suffering individual, it is by utilizing such an outlook that the therapist or pathologist can locate the sufferer within coordinates that simultaneously provide a structure for the extent of the illness, conjecture about the perceptual model used by the patient, as well as offer a way back to relative health. The four characteristics represent a therapeutic confluence of healing factors that finally gained traction in the earlier history of psychopathology. And while the distinction between *categorizing* and *observing* became clear enough, the co-equal importance of each characteristic is only now being recognized, nearly a century after the impetus of therapeutic interventions for healing psychopathological conditions.

For much of the developmental history of psychopathology, describing and explaining the problem was seen as disconnected from the intention of understanding; objective observation was seen as superior to subjective experience, the former was considered a scientific necessity while the latter was often considered a scientific nicety. Freud became an unwitting bridge between the objective and subjective approaches to human well-being. He believed himself to be firmly on the side of objectivity. He was, by James’ (1907) formulation, “tough-minded,” an empiricist and materialistic psychologist. For MacKinnon and Maslow (1951), “Freud rested squarely on 19th century scientific theory in his reductionism, his tendency to analyze, to dissect, to dichotomize” (p. 642). He, nonetheless, set forward the conditions under which an understanding of the mind involved *more* than measurable conscious cognitive activity. This was the door through which it became possible to bypass physiology and to psychologically understand psychopathology.

Ironically, it was Adler, Freud’s first defecting colleague, whose temperament and theorizing was better prepared to embrace objective and subjective psychology simultaneously. His holistic “both/and” position better fit James’ formulation (1907) of the “tender-minded” psychologist

who was both idealistic and monistic in his outlook on an integrated reality. But defectors from Freud's school of psychoanalysis did not fare well—a story that takes up volumes of history and psychology texts starting with Freud (1914) himself.

The salient point here is that in the development of psychopathology, the only two individuals who developed grand anthropological and psychopathological theories that remain today – besides Freud himself – were his first two dissenters, Adler and Jung. Neither originally intended to modify psychoanalysis; both believed the depth perspective allowed for different conceptualizations of the psyche. Historically, each found their theories developing while collaborating with Freud, yet both had initiated their views separate from him (Ellenberger 1970): Jung in an esoteric direction, Adler in the direction of social psychology. The distinctions among the “triple star” of psychodynamic practitioners cannot be overstressed, but here the Ansbachers' (1964) helpful overview will suffice.

Regarding **Freud's** field of inquiry – the vast context from which he viewed psychopathological issues – was based in human physiology. From here, he looked “into” the individual and sought to grasp the function of instincts as an intrapsychic issue. **Adler**, by contrast, contextualized psychopathology from an organic perspective: the individual (indivisible, holistic) organism was a complete functioning whole whose unified functioning occurred within the larger “organic” setting of culture. This viewpoint assumed that transactions between and among the individuals would provide evidence of both individual and communal psychopathology. **Jung**, for his part, was interested in what he considered a vast spiritual context where symbolism – mental/spiritual and archeological – could point to connections among peoples, and perhaps yield evidence of collective psychopathology.

From **Freud's** physiological field of inquiry, conflict became his frame of reference. Whether great or modest, all is in conflict: the death instinct conflicts with the life instinct; the superego conflicts with society; and, most fundamentally, consciousness conflicts with unconsciousness. **Adler's** inquiry from within an organically

interconnected field made his frame of reference the problem of cooperation within the community – from social inclusion to social exclusion. **Jung's** intangible field of symbolism made his frame of reference similarly nonmaterial as he concerned himself with the impenetrable mysteries of life, the esoteric, and arcane.

Not surprisingly, the methodologies applied by the three facilitated their arrival at altogether disparate findings about the resolution of psychopathological issues. **Freud** emphasized that the conflictual human journey within society could be accomplished only by embracing the reality principle, a conscious containment of personal pleasures so that a modicum of harmony can rise among individuals and communities. **Adler** conjectured that the evolutionary impulse that brought the human organism together with others for protection and survival had progressed along a continuum starting from parent/child affection and extending to appreciation for and participation in community. He believed this feeling for community (*Gemeinschaftsgefühl*), wherein both the individual and the community find mutual benefit, needed developing in all individuals. **Jung** saw the way to stable mental health by means of the lifelong individuation process – a conscious effort of uniting the personal and collective unconscious to become aware of one's place in the largest context.

Adlerian Thought and Current Psychopathology

It may be clear from this comparison that in practical application the three systems are not equally parsimonious. Determining their application in the psychopathology sphere, Adler's was undoubtedly – and deceptively – simpler. Ignored or criticized for being simply ego psychology (Freud, 1914) it is, nonetheless, Adler's Individual Psychology which most expresses the outlook on psychopathology today with its phenomenological, teleologic, holistic, socially focused, wellness orientation. The largely unacknowledged infiltration of Adler's thought *into* current psychotherapy practices today has been outlined in the opening essays of Heinz and Rowena Ansbachers' three compilations of Adler's works

(1956, 1964, 1978).² They were not alone in their finding. Henri Ellenberger (1970), historian of psychiatry, contended, “It would not be easy to find another author from which so much has been borrowed from all sides without acknowledgment than Alfred Adler” (p. 645).

This not only pertains to current psychotherapeutics but was already underway upon the separation of Freud and Adler. As far back as 1917, when Adler’s opus magnum, *The Neurotic Character*, was translated into English the actual development of therapeutic interventions strongly favored Adler’s interpretation of psychopathology despite using Freud’s nomenclature in psychotherapy generally (see Shon & Mansager, 2019). And it was an early follower of Freud, Fritz Wittels (1939) who determined that the neo-Freudians could properly be called neo-Adlerians. Ansbacher and Ansbacher (1956) identified nine prominent neo-Freudians whose position could be described as “stressing social relations rather than biological factors, the self rather than the id and the superego, the striving for self-actualization rather than the sex instinct, and the present situation rather than early experiences” (p. 16).

While there is not much mention of Adler among the psychoanalytic community at present, when the object relations theory of personality (Fairbairn 1954; Kernberg 1995) largely displaced the latent sexuality focus within psychoanalysis with a relational emphasis, even psychoanalytic authors could recognize Adler’s social focus as an originating influence (see Borden 2015). Already in the 1960s, the humanistic psychology movement – as “third force” in psychology’s development after psychoanalysis and behaviorism – became increasingly influential. It was then that Adler’s understanding of human nature could be differentiated from the development of psychoanalysis (Maslow 1962) and be seen as a major influence on humanism itself. At the same time other theorists (see Rotter 1962) recognized Adler’s contribution and

summarized the obvious alignment of psychopathology and psychotherapy *away from* Freud and *toward* Adler’s understanding: away from explaining behavior based on instincts, and toward a stress on the necessity and benefits of communal interaction (social embeddedness); away from considering sexual drive as a primary human determinant, and toward a more organismic understanding of a future-oriented human being (holism and teleology); away from the view of the person as amoral and therapy as a zone of “value free neutrality,” and toward a view of the person as at least capable of being an autonomous moral agent and recognition of the tacit influence that values play in psychopathology assessment and psychotherapy (phenomenology and social responsibility). These shifts were strong and consistent enough to withstand applied scrutiny and criticism from the psychoanalytic community (Kernberg 2011), and reliably evident in the current psychotherapies that *The Journal of Individual Psychology (JIP)* regularly and effectively provided comparisons of psychopathology theory and clinical practice within its pages.

Beyond the proponents of object relations and self-psychology who emphasized the relational nature of humans (e.g., Kernberg, Kohut), and the humanistic psychologies who flourished in the presentation of growth potential (e.g., Rogers, Maslow), Heinz Ansbacher, an early editor of the *JIP*, and subsequent *JIP* authors have made evident the early and persistent connection of psychotherapeutic development with Individual Psychology:

Interpersonalists offered a primary alternative to the intrapersonal nature of psychoanalysis (e.g., Sullivan); feminists championed equality of sexes opposing Freud’s contention that anatomy is destiny (e.g., Horney); social psychologies emphasized the context of larger interactions as not solely contentious as Freud did (e.g., Fromm); existential psychologies re-presented the mode of being as the subjective and phenomenological aspect of human integrity (e.g., May, Yalom); family and systems approaches addressed holistically intertwined interactions and transactions (e.g., Satire, Manuchin); the cognitive behavioral approaches (Ellis, Beck) developed a plethora of techniques for restructuring one’s phenomenological, subjective outlook on reality (e.g., Ellis, Beck); constructivist theory has again brought forward the subjective impact in a wholly postmodern manner (e.g., Kelly, Berger, Luckmann);

²These texts, prior to the publishing of *The Collected Clinical Works of Alfred Adler* (2002–2006), were the most accessible means to Adler’s theory by English-speaking professionals.

somatosensory approaches restate the holistic connections of the human being and its social interactions (e.g., Lavigne); family constellations work with the positive-negative energy within systemic family bonds (e.g., Hellingner); emotion-focused therapy emphasizes the security of emotional bonding (e.g., Johnson); while polyvagal theory accentuates the social engagement system and the social embeddedness of the individual (e.g., Porges); and, interpersonal neurobiology presents social connections as hardwired into the human system (e.g., Siegel).

These instances of Adler's structural influence on both psychopathology and psychotherapy arguably have become most apparent within the Positive Psychology movement today and its developing impact on optimal health (Watts and Ergüner-Tekinalp 2017). Seligman and Csikszentmihalyi (2000) have inspired a commanding amount of quantitative and qualitative research which gives credence to its declaration of being the declared school which offers an alternative to the causal-medical model of psychopathology today (Kobau et al. 2011). Its own growing research findings have convincingly established that "negative" inquiry and approach to human behavior no longer have complete dominance within the field. This has been clarified in contemporary critiques so that the issue is less one of positive/negative and more of causal/teleological inquiry (Wright 2014; Lazarus 2003).

Foundational Strength of Adler's Individual Psychology

Hopefully, the main philosophical underpinnings that are found though this entry's previous history-taking and current manifestation of psychopathology are now clear. Questions that remain are less about how the four constructs are presented in various psychotherapeutic approaches – since they appear in all of them – than about the extent to which each one is exhibited in each therapeutic methodology. Especially regarding current psychotherapies, the issue of resolving suffering begs the question: Within the whole of any given approach (psychopathology or psychotherapy), in what combination ("quantity" or "ratio") do the constructs appear?

It is in answer to this pivotal question that Alfred Adler again comes to the fore; not because he was

the originator of any of these concepts or the first to include any one of them in his approach, but because his style of thinking – indeed his entire style of living (see Hoffman 1994), seamlessly intertwined these perceptive schemata into a unique vision and understanding of humanity.

Adler was not the only theoretician or practitioner to address issues of phenomenology. As we have seen, others thought along these lines as well. Adler was not the first or only physician to holistically conceptualize his patients' suffering. Characteristically, Adler acknowledged his debt to Jan Smuts for Smuts' original conceptualization of the term, but other of his contemporaries were thinking along these lines. Of course, the teleological perspective is at least as old as Aristotle (Johnson 2005), and Adler was among a group of physicians who took their cues from organic life which could be seen restoring itself to a seemingly "planned" end-state long before DNA was hypothesized. Finally, the most noticeable battle in the psychodynamic outlook had to do with social embeddedness: was personal psychopathology an inwardly oriented or an outwardly oriented event? Adler was not alone in this arena either, nor can he be seen solely as Freud's adversary. The individual for Adler did not represent a dualistic, potentially antagonistically dynamic being. Instead, the two orientations – inward and outward – existed together, influencing one another, one taking ascendance if needed depending on the circumstances.

Adler's contribution was this solid positioning in the liminal place despite the cognitive dissonance engendered; and it led quickly and effectively to his ostracization among the original psychoanalytic community. By occupying a position on both sides of a boundary, he enlivened perceptions of humankind. Here, the internal dynamic of the individual is set within socially embedded circumstances – with each boundary continually, and vigorously, influencing the other. This typical stance of his prevailed regarding pathological cause and effect as well. Both the starting point (cause), what Adler understood as the exogenous factor of a given psychopathology, and its ending point (effect) were relative to one another, to the individual and to the circumstance.

In practice, this relativity did not result in ambiguous diagnoses. Rather, it was comprehensively decisive for the phenomenal individual. This is precisely the benefit of Adler's synthesizing approach to the unique possibility in psychopathological expression. He insisted on a distinction between the *general* and the *specific* diagnoses.

The *general* diagnosis – which all nosology seeks to provide – focuses on categorical and systematic presentations of the symptomology. Current efforts to personalize such symptom-based nosology (Schultze-Lutter et al. 2018) remains bound in the general and cannot go directly in a healing direction. Only by including simultaneously the circumstances surrounding the individual, as well as the person's internal dynamic, can a *specific* diagnosis be rendered: a diagnosis which by its phenomenological focus, potentially reveals the unique healing procedure.

By its etiological orientation, the *general* diagnosis is not designed to heal but to provide the conditions under which the healing regimen can be determined and implemented. On the other hand, by its teleological orientation, the *specific* diagnosis focuses on the individual interacting with its environment (expansively understood), and presents the possible distortions of thinking, feeling, and interacting and suggests their purpose – all of which are included in the healing process.

In this context, teleology can be seen to have differentiated meanings regarding psychopathology. As “end” it can refer to the effect which follows a causal incident; and in this sense it is a *relative end*. Teleology can also reference the normal course an illness runs until it is finished, and death occurs, or health is restored as the *final end*. But from the phenomenological, holistic, teleologic, socially embedded perspective, it can also be the *intended end* which was conceived in some fashion from the outset. Such “intentionality” will have to be addressed below, but for now we have provided the warrant for Adler's Individual Psychology being considered as especially suited for presenting the contribution of possibility studies *visa vie* psychopathology. What is left is for the authors to highlight two of Adler's *clinical* concepts to demonstrate some positioning of the possible. This will be done by addressing how Adler's anthropology construed movement toward wellness within psychopathology.

Summary: Synthesizing Possibilities of Current Psychopathology

In this section, the traditional concentrations of psychopathology – both the assessment of thoughts, feelings, emotions, personality, as well as the resulting experiences – are introduced under Adler's construct of expressive, dynamic, psychological *movement* (Stein 2014; Stern 2010). Adler conceived of organic life generally as movement from a minus position (–) to a plus position (+), from a state of incompleteness to a striving for completion.

For Adler, our human experience of life, meaning the psychic life, flows from the organic life and the striving from minus to plus. He famously described this movement as striving from a felt inferiority to a fictional superiority. Both concepts of inferiority and superiority were generally neutral except in the valuation (feeling tone) of the individual. Thus, the movement toward superiority over challenges in life was frequently termed “mastery” or conquering the adversity. When one's striving movement aimed at becoming superior to another individual, however, it was usually termed “power over” the other. In this way the impetus to move, to strive, was *stimulated* by the sense of inferiority. This understanding of the innate power-distribution of humanity became a truncated cliché about Adler's method among detractors within the psychoanalytic schools (Jones 1955).

In fact, Adler's theory continued to develop after leaving Freud. It was likely due to his treating frontline soldiers during the First World War that Adler began to think of the direction of the impetus to overcome one's inferiority feelings. In the years just after the Great War, Adler posited an innate potential, the possibility, of a given direction being established for movement from the minus to the plus. He conceived this as one's relative interest in being socially embedded, or being *socially interested* in one's surroundings. For Adler (1918), a dual dynamic of motion and direction parsimoniously represented the basic human striving found in human interactions of all kinds. When the stimulated direction was toward, for, or with others Adler, from a utilitarian

viewpoint, identified such action on the useful, helpful, or contributing side of life – one had an adequate feeling for community (*Gemeinschaftsgefühl*). When the movement was away from, against, or left out others, he concluded they were useless to, unhelpful for, or detracting from the commonweal. This level of one's social interest was inadequate to sustain real benefit for the community or the existential wellbeing of the individual.

Such striving or movement was part of Adler's overall construction of a general diagnostic continuum along which *psychopathology* and *wellness* could be located. He did not describe the two as opposite one another, but in relationship by means of their force (derived from the depth of the inferiority feeling) and direction (relative amount of social interest). Socially interested striving accounted for cohesive communal living, while the striving that lacks social interest manifest as more self-bound and would be used when pitting one individual or group against the other. From this construction, psychopathologic expressions – whether activities, thoughts, or feelings – remain the focus. But, for Adler, wellness could for the first time be understood in terms beyond “that from which” pathology deviates.

From what has been explored here, *movement* and *social interest* have emerged as the synthesizing clinical constructs for the four salient characteristics of psychopathology – phenomenology, holism, teleology, and social embeddedness. Categorization of symptoms can be accomplished by conceptualizing the motion as “frozen,” but categorization cannot in itself offer a perception of the *living*, moving entity. Movement is phenomenologically personal and idiosyncratic, and its relationship to wellness embraces all aspects of life. Interacting waves of movement from others advance toward a goal as “forward” in the direction life takes – and where possibility lies. In order to see the movement within a frozen symptom, the phenomenal individual is considered as part of the holistic milieu in which the self-motivation to

escape feeling inferior (by striving for a goal of superiority) embeds the individual to some degree in relationship to others.

Cross-References

- [Creative Development](#)
- [Divergent Thinking](#)
- [Insight](#)
- [Malevolent Creativity](#)
- [Open-Mindedness](#)
- [Perspective-Taking](#)
- [Possible in Psychology](#)

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Real Utopias

Masoud Movahed

Department of Sociology, University of
Wisconsin-Madison, Madison, WI, USA

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When radical critics of capitalism become desperate for empirical models that embody their aspirations, wishful thinking can triumph over sober assessments. The complementary danger is cynicism; there is great cachet among intellectuals in debunking naïve enthusiasm. What is needed, then, are accounts of empirical cases that are neither gullible nor cynical, but try to fully recognize the complexity and dilemmas as well as the real potentials of practical efforts at social empowerment. – Erik Olin Wright, *Envisioning Real Utopias* (2010, p. 151)

In a powerful passage, one of the world's leading literary critics in the past century, Edward W. Said wrote that “[t]he intellectual's representations—what he or she represents and how those ideas are represented to an audience—are always tied to and ought to remain an organic part of an ongoing experience in society: of the poor, the disadvantaged, the voiceless, the unrepresented, the powerless.” (1996, p. 113). But only a few embrace and sustain this commitment with the goodwill that Erik Olin Wright brought to his work and life.

Wright was a distinguished sociologist and, from 2011 to 2012, president of the American Sociological Association. He died on January 23, 2019, after 9 months of fighting acute myeloid leukemia. Born into a family of academics in California and raised in Kansas, Wright studied social science and history at Harvard and Oxford before starting a doctoral program in sociology at the University of California, Berkeley in 1971. Upon defending his dissertation, he was hired in the sociology department at the University of Wisconsin-Madison in 1976, where he stayed until his death. Leaving behind a tremendous oeuvre spanning more than 40 years, Wright generated a vast array of innovative research across an exceptionally wide array of subfields including social stratification, ethnography, political sociology, economic sociology, and sociology of gender. He will be remembered as the most influential theorist of class within the Marxist tradition in the second half of the twentieth century.

Since the early 1990s, Wright began a major research project entitled “The Real Utopias,” which at its heart, explores a wide range of proposals and models for radical and emancipatory social change. The central aim of the project is an attempt at bringing forth and sustaining serious debates around radical alternatives to existing structures of inequality, domination, and privilege. The objective, then, is to call forth specific, *workable* proposals to fundamentally redesign extant social institutions such that it yields

positive effects on human flourishing. This is inspired by Wright's commitment to a fundamental proposition in Marxist social science that "take [s] the intellectual from relatively discrete questions of interpretation to much more significant ones of social transformation" (Said 1996, p. 110). It is in this spirit that Wright started the project in order to design institutions and blueprints for a just social order – a task that Karl Marx himself forswore (Movahed 2021).

Utopias Versus *Real Utopias*

Prior to examining The Real Utopias Project in detail, an important distinction must be made between "utopia" and the oxymoron "Real Utopia." In strictly literal sense, utopia means "nowhere" (Wright 2012, p. 38). It is a fantasy world where ideals of a just and good society are fully realized; a place in the "imagination of peace and harmony, of flourishing lives and happiness." It "reflects the human longing for escape from the oppressions, disappointments, and harsh realities of the real social world" for one free of these maladies (Wright 2012, p. 38). *Real Utopias*, however, as Wright coined the term are much more than just passive dreams. It is a visionary and realistic attempt to "elaborate, clear-headed, rigorous, and viable alternatives to existing social institutions that both embody our deepest aspirations for human flourishing and take seriously the problem of practical design" (Wright 2012, p. 37). Hence, exploring real utopias necessarily suggests developing a sociology of the possible, and not just the observed. This is, as Wright recognized, is a delicate research problem, because discussions of possibilities (and impossibilities) – and not just observing variations in the world – always "involve more speculative and contentious claims (Wright 2010, 2012, p. 37)." The task of a sociology of the real utopias, then, is to open up a whole arena of social-analytical research "that enable us to make empirically and theoretically sound arguments about emancipatory possibilities" (Wright 2012, p. 37).

When it comes to understanding what is and what is not a real utopia, it is important to underscore the difference between *ameliorative* from *emancipatory* reforms. Ameliorative reforms such as welfare programs, unemployment insurance, maternity leave and the like are crucial because they provide some form of material relief to those who often need them (Calnitsky 2017). These forms of ameliorative reforms are ubiquitous across states in one way or another. Emancipatory reforms, however, not only contain ameliorative effect but also push us closer to the broader moral and utopian vision. They often carry a liberating effect by tipping the balance of power in favor of the powerless, the poor, the disadvantaged, and the voiceless. Hence, the real utopias are both "real" (i.e., viable, desirable, sustainable) and "utopian" (i.e., they go far beyond the normative visions of reforms that we have thus far experienced). Wright coined the term "Real Utopias" deliberately to indicate that strategies for transforming capitalism to a democratic socialism can be found in the nooks and crannies of actually existing capitalism. That is to say, we need to look for extant institutions that do not follow capitalist principles even as they operate within—or on the fringes of—the capitalist system.

Seeking to explore a wide range of realistic and achievable proposals for social and economic change presume identifying a set of immediate tasks. The exploration of real utopias is therefore an integral part of a broad agenda of an emancipatory social science and includes the following tasks: (1) identifying the *moral principles* for judging the effects of social institutions; (2) Using these moral principles as the standards for *diagnosis and critique* of existing institutions; (3) Developing an account of *viable alternatives* to the response to the critique; (4) Proposing a *theory of transformation* for realizing those alternatives (Wright 2010, 2012, p. 3). The first two tasks inform our perspective as to what kind of world do we want and what is wrong with the world in which we live; the third encourages us to think innovatively about

alternative ways of designing social blueprints; and the fourth helps us think about strategies of how to transform the existing structures (Wright 2012, p. 3).

Moral Principals

What are the moral principles that animate the real utopias? Wright identified three key principles that drive intellectual efforts to envision real utopias. Those include: equality, democracy, and sustainability (Wright 2010). It has now become obvious that capitalism impedes all of these ideals. Under capitalism, decisions and their implementation often lead to a significant degree of economic and social inequality (of income, wealth, power and life chances) that is hardly acceptable in a democracy built on principles based on equal rights and opportunities. As Wright argued, in a truly just society, “all people would have broadly equal access to the social and material conditions necessary for living a flourishing life” and in a “fully democratic society, all people would have broadly equal access to the necessary means to participate meaningfully in decisions about things that affect their lives” (Wright 2012, p. 3).

Developing an account of alternatives both for specific institutions and for macro-structures of society lies at the core of the Real Utopias Project. Alternatives can be evaluated in terms of three specific criteria: desirability, their viability, and their achievability (Wright 2010, pp. 18–23). If only the first of these three criteria is met and viability or achievability are ignored, then only a plain utopia is envisioned – not a real utopia. Envisioning real utopias therefore requires pragmatic undertaking, such that ideas are constantly examined and tested against the criteria highlighted above. However, the question that arises is that what are the notable example of real utopias that operate within capitalism through they do not follow capitalist logic? In what follows, I will briefly discuss the notable examples of real utopias. This list is not, by any means, exhaustive. For more detailed discussion of extant

examples of real utopias, see chapters 5, 6, and 7 of *Envisioning Real Utopias* (Wright 2010).

Notable Examples of Real Utopias

Unconditional basic income (UBI). It is a proposal to give every legal resident of a nation an income sufficient to live above the poverty line without any employment requirement – or any other conditions for that matter (Wright 2011, p. 41). UBI is a fundamental transformation of the income distribution system across societies, one that “has potentially profound ramifications for the realization of democratic egalitarian values” (Wright 2011, p. 41). It is one of the most liberating real utopias because it takes freedom to a different level. As Wright insisted, “for freedom to be meaningful you have to be able to make choices and above all, you have to be able to say no to things that are harmful to you. And that’s what an unconditional basic income does. It enables people to say no to bad employment” (Tunghai University, Memorial for Erik Wright, 2019, p. 1). Wright thus underscored the importance of UBI for the power relations in the broader class structure of capitalist societies. According to both Marxian and Weberian class analysis, in a capitalist setting, workers are separated from their means of production and hence, from their means of subsistence because they must enter the labor market and seek employment in order to socially reproduce themselves. This dual separation provides the material basis for the fundamental power imbalance between capital and labor: for workers to live, they have to sell their labor power, which then means they are forced to accept terms of exchange and working conditions, however abysmal they may be. Wright emphasized that UBI would not only have ramifications for the power imbalances of capitalist class relations, but its effect is particularly salient for the low-skilled, low-wage earners. For union and non-union workers, it supplies them with “permanent strike fund” and much greater collective bargaining power (Wright 2004, p. 79).

Worker-Owned Cooperatives. Perhaps one of the oldest visions for an emancipatory alternative to capitalism is the worker-owned firm. Marx insisted that the secret origins of capitalism, as an economic system, lay in an initial accumulation of capital that rested upon dispossessing workers of their means of production and then employing them as wage-laborers in capitalist firms (Marx 1992[1867]). And indeed, the most straightforward way of remedying this dispossession of workers is through democratizing capitalist firms by ways of expanding worker-owned firms. To be sure, worker cooperatives do operate within capitalism though they are not the dominant form of industrial and firm organization within market economies. The world's largest federation of worker cooperatives, Mondragon Corporation, is in the Basque region of Spain and is a conglomerate of more than 100 separate worker cooperatives that produce a wide range of goods and services, including high-end refrigerators, auto parts, bicycles, industrial robots, and more (Wright 2012). There are many virtues to expanding worker cooperatives. First, in workers cooperatives, profits do not go to some distant investors, but instead go directly to the workers themselves. Capital, therefore, remains grounded in the local economy and builds community wealth. Second, when workers themselves are the owners, capital remains accountable to the local community of workers. If workers are the owners, they will not just “shut down” the company and move it to the Global South just because it is cheaper and more profitable to produce there. Instead, they would devise some kind of mechanisms for the firm to remain operative and remain in place. Third, the feeling that workers themselves own the firm often grant them meaning and job satisfaction (Rothschild-Whitt and Whitt 1986).

Legislature By Lot or Sortition. Presenting pathologies of electoral democracy, Wright argued that randomly selected citizen assembly is likely to deepen democracy (Wright 2019; Gastil and Wright 2018). A number of familiar problems plague democratic processes even in highly dynamic electoral democracies including, “campaign finance, candidate selection biases,

and problematic media coverage” (Gastil and Wright 2018, p. 305). Sortition, Wright argued, could eliminate or substantially mitigate the shortcomings of electoral and legislative processes. The most immediate effect of sortition is that it solves the problem of control by the monied interests over electoral processes such that it allows those to hold power who are most trustworthy to do so – because they do not seek it in the first place. Legislature by lot would therefore give members of every group equal opportunity to share power and would preclude the formation of self-serving political forces that are often completely divorced from their electorates.

Wright devoted a lifetime to social justice research and his Real Utopias Project was inspired by the ideals of emancipatory social science, emphasizing the urgent on the need to design institutions, to be a realist with imagination, and to remain patient but perseverant. If Gramsci is famous for saying that we need pessimism of the intellect but optimism of the will, Erik Olin Wright showed us that we also need some optimism of the intellect to sustain optimism of the will. He will always be with us.

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Reality

Jack S. Crumley II

Department of Philosophy, University of San Diego, San Diego, CA, USA

Abstract

Metaphysics aims at providing an account of the nature of ultimate reality. An enduring theme is the contrast between appearance and reality. Although differences exist, it is possible to see various theories as falling within a relatively small number of categories. The following provides an overview, beginning with a commonsense view. Naturalism is today widely held, with its roots in antiquity. This view, however, has from the beginning continued to be subject to doubts, especially concerning the nature of the mind or consciousness. A particularly bold view holds that reality is one, despite the seeming existence of or appearance of many individuals; two versions are presented – Spinoza’s substance view and Hegel’s absolute idealism. Hegel’s view is introduced through Kant’s transcendental idealism. The chapter concludes, with a consideration of the nature of three types of objects, the nature and existence of universals, which of course stretches back to Plato; possible worlds, whose existence and nature have been an especially prominent subject since the last decades of the twentieth century; and impossibilia or Meinongianism.

Keywords

Appearance and reality · Naturalism · Substance · Transcendental idealism · Thing-in-itself · Absolute idealism · Universals · Nominalism · Possible worlds · Possibilism and actualism · Meinongianism

Reality as the World of Common Sense

Our experience of the world reveals (or at least seems to) a plurality of distinct objects or individuals. These objects are located in a real time and space, and they have a wide range of properties. We know of some of these properties by means of the senses, those such as color, sound, feel, taste, and fragrance. But some of the properties we attribute to these objects we learn from “experts,” often scientists. Thus, we learn from experts that the sun does not drop below the ocean horizon in the evening, and it is much, much bigger than the cloud that just hid it from view or that a table is constituted by, or is here in virtue of, protons, neutrons, and electrons and apparently even smaller things yet. And here we encounter the distinction between *reality* and *appearance*. Things may seem or appear one way but, in reality, is something very different. The table seems solid with no “gaps.” A very complex physical theory says otherwise. Indeed, the title of a recent book by a well-known physicist is *Reality Is Not What It Seems* (Rovelli 2017).

Moreover, the reality of common sense is a world in which these objects continue through time and that, in some unexplained sense, they are the same as they were before – that pup asleep in his favorite afternoon spot is the same pup that I left this morning. In addition to their properties, these objects have a variety of relations to one another: being to the left of, sitting on top of, belonging to, and being a part of. Perhaps the most important relation is that of cause and effect. This flame causes the water to boil; that magnet holds this flashlight to the side of the car. Indeed, the world of common sense is a “causal world” – these ice cubes wouldn’t be here were it not for the “cold” of that freezer, and that little baby wouldn’t be here were it not for the...well, you know that story.

Common sense holds that reality comprises a world of distinct individuals that *are physical*. This commonsense reality also includes *sentient* or *conscious* “objects”; some of these are even *self-conscious* beings. In some sense, all of the animal kingdom is sentient or “aware” of features in the environment. Common sense tells us that

we are in a world with other *minded* persons. Those persons have thoughts, beliefs and desires, and hopes and wishes, and they experience various sensations and emotions. We acknowledge that many animals similarly experience sensations such as pain and at least some basic emotions such as fear. At times, these minds or these mental lives seem very different from the physical or material world. Some express doubt that science can tell us what love is, while others seem sure that one day that some science of the mind, such as neuroscience, will tell us exactly what it is for Amelia to love Jack. And similarly for all the other thoughts, emotions, and sensations.

Discerning some criterion for what it is to be real, for Reality, in the preceding is not as easy as it might seem. One thought is that Reality is the physical. And the physical is that which is studied by the sciences. Still, if science can't explain or explain away consciousness, then reality is not just the physical. Too, reflection might lead us to wonder whether reality comprises a plurality of objects or there is some sense in which it is a unity, whether reality is one. Contemporary science plays a prominent role in determining what's real. So, we might start there.

Reality as Physical: Naturalism

There is nothing more to reality than the natural world, comprising a plurality of objects and properties; this is the view of contemporary naturalism. The natural world is the world revealed to us by the natural sciences. Naturalism stretches back to the ancient Greek atomists, originating in the Epicurean atomistic world view and later Democritus (460 B.C.E.–370 B.C.E), who held that atoms moving through the void and their subsequent collisions (and configurations) are the origin of the world. The first century B.C.E. Roman poet Lucretius' booklength poem *De Rerum Natura* continued the atomistic tradition; the influence of this work continued through the centuries, even influencing the early modern atomists.

Although naturalism is not necessarily committed to physicalism (Goetz and Taliaferro

2007), most naturalists today are physicalists. In what follows, naturalism holds that only the physical is real. (Also, here “materialism” and “physicalism” are interchangeable.) As a view of reality, naturalism has two principal components: (1) an ontological component and (2) a methodological component, where the methods of learning about reality are continuous with the methods of the natural sciences.

The existence and nature of physical objects, their properties, and relations are the subject matter of the natural sciences, understood broadly to include, for example, cognitive psychology, neuroscience, and cognitive neuroscience. To exist, to be part of reality, then, is to be among the objects and properties that are the subjects of scientific inquiry.

It is a matter of some contention, however, what should count as a physical object. One option is to hold that the only real objects are the basic particles identified by physics (quarks, leptons, hadrons, and perhaps quantum fields, according to some). A second is to hold that the only physical objects are those reducible to these basic particles (e.g., Kim 2005). The notion of reducibility is that there are set of rules or “bridge laws” that explain how theories about more complex objects may be ultimately understood as a particular arrangement of more basic particles and their properties. It is controversial whether higher-order objects, such as cells or neurons, and even more complex objects are in fact reducible to the basic particles of contemporary physics.

A third option holds that physicalism includes our ordinary objects along with the objects of our best scientific theories. Although macroscopic objects are not reducible to basic underlying physical objects, they nonetheless *supervene* on those objects. *Supervenience* is itself a difficult concept, and different supervenience relationships have been elaborated. For present purposes, to say that the objects (and properties) of Theory A supervene on the objects (and properties) of Theory B is to say that there can be no changes in Theory A objects unless there is some difference in Theory B objects (McLaughlin and Bennett 2018). That the mental supervenes on the

physical, or more immediately on the neurophysical, is a prominent example of supervenience. For example, Amelia's belief that Jack is a fashion photographer, while not reducible to patterns of neural activity, supervenes on neural activity.

The "poetic naturalism" recently advocated by the physicist Sean Carroll is likely an example of this sort of supervenience relationship. Carroll holds that the basic physical particles are the ultimate foundational structure of reality. Yet there are other theories, especially the "theory" of the world of our ordinary experience, that are replete with people, minds, animals, Gerber daisies, St. Louis, baseballs, iPads, smartphones, and the simple white coffee cup before me that are consistent with basic physical theory (perhaps including quantum field theory) (Carroll 2016). Whether one subscribes to the details of Carroll's view, it has two central features held by many. First, everything that there is – all of reality – is physical. Hence, naturalism. Second, different "levels" of theories capture different aspects of reality. Quantum physics, cognitive neuroscience, and commonsense psychology each describe features of reality.

Although naturalism, because of its insistence that all of reality is physical, rules out the existence of God or angels or nonphysical souls, our interest here is whether a physicalistic naturalism can account for aspects of our mental life, especially consciousness. Some have argued that, for example, physicalism alone cannot explain the *normative* aspects of our experience, such as norms of rationality or ethical norms. Natural science alone cannot explain the nature of the normative. Here, we focus on only one argument about the relation between consciousness, including the sentience of nonhuman animals and self-consciousness, characteristic of human consciousness, and the physical.

The idea of *what it is like* came to prominence with Thomas Nagel's "What Is It Like to Be a Bat?" (Nagel 1974). More recently, his *Mind and Cosmos* argues that naturalism cannot be true (Nagel 2012). Here we focus on the former, which only concludes that we cannot see how to reconcile science with a feature of consciousness.

Types of conscious experience have a *point of view*, which we identify as *subjective*. There is something that it is like to be that type of conscious being. There is something that it is like to be a chimpanzee, a cheetah, and there is something that it is like to be a bat. Nagel says that this point of view is essential to consciousness. Science, however, necessarily abstracts from point of view. By its very nature, science strives for the objective that is to represent the world from *no point of view*. He argues that we do not know how to overcome the apparently irreconcilable essential features of consciousness and scientific theorizing. We cannot do so, he claims, by imagining ourselves inside a bat, as though our human consciousness was a passenger in a "bat mobile." Objective, "no point of view" scientific theory has no way of capturing what it is like, from the internal perspective of a bat, a faithful canine, or a human being. That consciousness is essentially a point of view which means that we cannot fully grasp what it is to be that type of being unless we are that type of being.

In his 2012 work, Nagel insists that consciousness is "the most conspicuous obstacle to a comprehensive naturalism," at least to the extent that naturalism takes scientific theory as the framework for understanding reality. He further claims that if the intractability of the nature of consciousness is correct, then science or naturalism gives us "only part of the truth" (Nagel 2012, p. 11). He further argues that evolutionary science cannot be the complete story of reality.

Physicalists have, of course, responded. It is argued, for example, that we have a very good *objective* understanding of why there are differences in the nature of experience. Such differences arise due to differences in neurophysiology and interactions with the environment. Or, more simply, we can account for subjectivity differences by pointing out that, e.g., Amelia and Alyssa have different brains. Others have argued that the notion of consciousness is not itself clear enough to support Nagel's conclusion (e.g., Daniel Dennett 1991). Or the empirical work on the nature of consciousness by psychologists and neuroscientists will eventually lead us to a satisfactory naturalistic explanation of point of

view (e.g., Bernard Baars 1997; Crick and Koch 1990; Block et al. 1992). Thus, physicalists hold that there is no reason in principle that we could not have explanations of the “what it is like” character of experience.

Those like Nagel who insist on the irreducibility of consciousness understand and accept that, for example, Amelia’s and Alyssa’s physical differences or neurological differences can explain the *fact* of different points of view. Indeed, science may well explain a variety of neural correlations. Still it might be insisted, contra naturalism, that Nagel has indeed provided an “in principle” argument. The “what it is like” character, as far as we can now discern, is a necessarily “first-person” perspective – the subjective – that is not amenable to the third-person or objective viewpoint of scientific theorizing. The inescapably nonphysical character of consciousness is also argued in a widely discussed essay which holds that there is always an aspect of conscious experience not captured by science (Jackson 1982).

The dispute between contemporary naturalism and its critics ranges into many disciplines, not simply whether God exists or consciousness can be explained naturalistically. Since 1969, there has been an ongoing debate about naturalizing epistemology and whether the essentially *normative* features of epistemological theory are properly accounted by naturalism (especially Quine 1969; Kim 1988; see also Crumley 2009, Chap. 7). More recently, naturalists have pushed views that attempt a naturalistic account of values and, thus, of morality. That is, it is held that value judgments and at least certain types of moral theory can be given a biological, evolutionary, and neuroscientific explanation (e.g., Thagard 2010; Patricia Churchland 2012). Again, critics of naturalism have expressed doubts. These intriguing discussions unfortunately cannot be properly addressed here.

The Real Is One: Substance and Idealism

Our experience may tell us that reality comprises a multitude of separate and distinct individuals,

each with uniquely identifying properties. Many philosophers and theologians have, however, thought and argued that reality is but one. Often this single reality is characterized as the *Absolute*. While our experience of many individuals is not delusory, that experience does not reveal the ultimate nature of reality.

Absolutists can be divided into two broad categories, those who approach reality by means of a notion such as substance and those who are idealists. We begin with a substance view of absolutism.

Substance as One

Aristotle (384–322) introduced the notion of *substance* to explain the nature of the real. Benedict Spinoza (1632–1677) argued that a commitment to substance as underlying reality leads to the conclusion that the real is one (Spinoza 1883/1955). Spinoza’s view is best seen against the frame of the history of the notion, stretching from Aristotle, runs through medieval philosophy, and functions centrally in the work of Rene Descartes (1596–1650) (Wolfson 1934/1958). Descartes is well-known for distinguishing within *created* reality two distinct substances: bodies, which have as their essential characteristic *extension* (or, as we might say today, takes up space), and minds, which, while located in time, have as their essential characteristic *thinking*. Descartes also invoked a fundamental sense of substance *that which can exist in and of itself*. In Descartes’s view, only God is substance in this sense, since all other reality depends on divine creativity and preservation for its existence.

Spinoza argues that if substance is that which can exist in and of itself, then there is only one substance. Or: there is only The One. Spinoza refers to this “One” as Nature, God, or Substance. He further held that the logic of the concept of substance was indeed logical and hence the metaphysical structure of reality. In Spinoza’s view, we see a reality discernible (in part) by human reason. Hence the Real is the Rational. In coming to apprehend or being cognizant of that structure, tracing the metaphysically necessary consequences of the concept of substance, we see that reality is one. Gone are distinct

individuals that Aristotle identified as primary substances. For Spinoza, our “individuals” are only particularized manifestations (“modes”) of Substance. Nature or Substance can be viewed as *thought* or as *body*; thought and extension are the two essential attributes of substance. (It is thus sometimes characterized as a dual aspect theory or neutral monism.)

Spinoza identifies substance as that which is *in itself and conceived in itself*. Since Substance is “in itself,” it is independent of any other and thus must be eternal. To have come into existence, Substance would have to either come from nothing or have been created by something else. The first disjunct, however, is logically impossible. *Ex nihilo nihil fit*: nothing comes from nothing. But if the second disjunct were true, then Substance would depend on another for its existence, and hence not “in itself.” There is *only one infinite substance*. Spinoza tells us that if there were two substances, then Substance would be limited by the other and again not in itself.

Informally, our experience presents to us obvious existence. *Something exists*. Asking about the nature of the existent moves us to thinking of independent existence, even if it is the independent existence of many different “existences.” But then reason seems to push us a bit further: what is it to “really” be independent? Here we confront Spinoza’s concept of substance or that which is in itself. Spinoza would hold that the notion he presents of Nature or Substance isn’t merely a chain of logically structured propositions, but he has in fact presented the metaphysical structure of reality: Reality is one, eternal, and infinite. And it is *necessarily* this way. It could not be some other.

If Reality is in fact one, why does our experience present us with seemingly distinct individuals? In Spinoza’s view, experiencing the world as a plurality is a reflection of our necessarily limited perspective. Our ideas are confused because we are but finite modes or manifestations of substance. Reason can partially overcome this limited view, so that we can see that Substance is one. But we will never possess the complete knowledge necessary to grasp fully the essential oneness of reality. We would, in fact, have to

be identical to Substance or God to possess this complete knowledge.

There are some similarities between this view and the *advaita vendanta* of Hinduism, as elaborated and defended by Sankara. Brahman is the fundamental reality, the source or ground of all being. This view perhaps emphasizes the creative aspect of Brahman more than we see in Spinoza. Atman is self-consciousness or the Controller, which is indeed identical with Brahman. Our individual egos (minds) are but the particularized manifestations of Atman. The individual mind is not an independent reality, but neither is it wholly delusory. Our “task” is to come to realize the ultimate structure of reality and to grasp that we are but part of the way in which Atman is manifested (Rambachan 2005).

Absolute Idealism

The Transcendentally Ideal

Idealism of the nineteenth and twentieth centuries is spurred by the work of Immanuel Kant (1724–1804). In his watershed work, *The Critique of Pure Reason*, Kant attempts to overcome the apparent dichotomies of subject and object, of idea and nature, and of rationalism and empiricism (Kant 1929/1965). Kant offered a dramatic critique, or analysis, of the nature and limits of human reason. Doing so, he argues, leads us to see that we can assure ourselves of the existence of empirical reality – the world of our experience – but only by adopting a *transcendental idealism*. That is, we must recognize:

The *a priori* conditions of a possible experience in general are at the same time conditions of the possibility of objects of experience. (Kant 1929/1965, A111)

In Kant’s view, prior philosophy sought to explain our knowledge of the world, and hence to vouchsafe the reality of the content of our experience, by finding those principles or criteria that enabled us to separate out the true from the false in our experience: the mind was to conform to the object. The aim of course was twofold: (a) underwrite our knowledge of the world or reality, and simultaneously (b) reveal the nature of reality as it is in itself.

Kant's new *Copernican Revolution* insisted that "reality" conforms to the special, innate fundamental concepts that organized all of our experience. These concepts he called "categories." His famous transcendental deduction of the categories is an attempt to show that all our experience is organized by precisely these categories. We necessarily experience the world as causally structured – the category of causality at work, comprising a multiplicity of distinct relatively enduring individuals – e.g., the category of substance at work. The objects experienced are indeed spatiotemporal objects, but space and time are the *forms of intuition*. We can only experience the world *through* the forms of intuition and according to the categories. Empirical reality is grounded in the structuring concepts – categories – of our consciousness.

Another *kind* of consciousness might experience the world differently. Given different concepts or categories, the structure of experience, and hence the nature of empirical reality, would be thus different. This feature of Kant's view leads to a much debated issue in the twentieth century philosophy, centered around the notion of a conceptual scheme. This idea of a conceptual scheme – that different sets of categories yield different and perhaps incompatible types of experience – seems to trail in its wake *conceptual relativity*. The issue is still much debated and serves as a line of demarcation between realists, those who hold that there is a single objective reality, at least in part knowable by us, and anti-realists, those who hold that reality is but a reflection of our basic and fundamental concepts.

Kant holds, then, as seen in the above quote, that we know *in advance* – that is, *a priori* – the general nature of any object that we will encounter in experience. These "facts" are reflected in synthetic *a priori* judgments: synthetic because they reveal something about the content of our experience, yet *a priori*. No matter one's particular experience, we know *a priori* that the content of that experience is necessarily structured by the categories.

We are thus guaranteed knowledge of an objective reality, since the conditions of that knowledge are universally accessible. Better: we

are assured that we have contact with an empirical reality, but only on condition of adopting the standpoint of the transcendently ideal.

That transcendental idealism that underwrites empirical knowledge raises one of the more troublesome aspects of Kant's view, the thing-in-itself. Kant holds both that our knowledge of objects is always "framed" by our categories, yet we are justified in claiming that there is indeed a way that the world is *in itself*. Critics have rightly asked how Kant is justified in making such a claim; the thing-in-itself, according to Kant, transcends our categories. But all our knowledge is confined to what can be categorized. Thus, the difficulty appears.

Absolute Idealism

Kant's view leaves subjectivity unreconciled with the real object, the thing-in-itself. Absolute idealism seeks to overcome this gap; it seeks to unify idea and nature. In this the absolute idealism of the nineteenth and twentieth centuries is a return to the absolute idealism of Parmenides' (born c. 515 BC) poem in which he claims that "Being and thought are the same." Idealism, as it is approached here, is the view that the Idea is the active force in the structuring and organizing the course of experience; in particular, the relation of the particulars to the whole or the one that generates them is to be found in the idea. Importantly, nature is part of this one; the idea is not separated from nature. Thus, we have absolute idealism (Dunham et al. 2011, p. 11). Subjective idealism is distinct from absolute idealism and frequently characterized as the view that only minds and their ideas exist, with the attendant corollary that there is no physical world. (Bishop George Berkeley (1685–1753) is thought to exemplify this view.) Absolute idealism in the nineteenth and twentieth centuries included German, British, and American philosophers. Two common themes are the necessary "union" of nature and the idea and hence the "identity in diversity" of subject and object or consciousness and its content.

Seeking the unity of thought and object can be seen as motivating the absolute idealism of Georg W. F. Hegel (1770–1831). Like Parmenides,

Hegel held “the principle that Being is Thought” (Hegel 1949, p. 113). The initial sensuous encounter of consciousness with a particular object is but a first step or stage in the process or unfolding or development of self-consciousness. This sensuous encounter can only be understood, in Hegel’s view, once it is recognized that consciousness is always a self-consciousness. Self-consciousness, in turn, sees thought and the object of thought, which we initially think of as other, as a necessary unity. Self-consciousness always maintains this “double-stance,” seeing the object both as other and as necessarily a part of consciousness. As he remarks, we must see the “ultimate truth not as Substance but as subject as well” (Hegel 1949, p. 80). Unlike that metaphysical tradition that was preoccupied with substance, Hegel thinks we must see our encounter with the world as the activity of consciousness becoming self-consciousness. Consciousness is necessarily an awareness of an object, but it is always aware of itself as consciousness. Thus, thought “comes to itself,” or realizes itself, only in the thinking about an object.

However, these particular “awareness-es” are not enough for thought. Thought necessarily seeks the whole of knowledge, and the whole of knowledge is necessarily an *organized, interconnected system*. At one point, Hegel appeals to the metaphor of the *process* of bud, blossom, and fruit. No one moment of this process explains the whole; it is only in recognizing the stages as moments (Hegel’s term) in the whole that mind or thought or spirit is fully realized (Hegel 1949, p. 68).

He continues that “Science can become an organic system only by the inherent life of the *notion*” (Hegel 1949, p. 111; my italics). *Notion* or *Concept* is a crucial term for Hegel. When we apprehend or become aware of some object, this activity is the notion becoming manifest, or to rely a bit on Plato, it is the process of the universal becoming concrete. As our knowledge continues to grow, as the system becomes more complete, all of these particular moments of the notion manifesting itself in concrete experience progressively draw closer to the Whole or the Absolute or

Spirit, thus being fully realized (also, Dunham et al. 2011, pp. 144–152). In a striking sense, the complete self-realization of Spirit is thus the end of history.

Thought and Being are the same in Hegel to the extent that, as he says, Substance becomes Subject. The Spirit as the Absolute is the organic and total self-realizing of itself.

The tradition of absolute idealism is much richer than these brief paragraphs are able to suggest. But perhaps they suggest something of the scope and depth of this absolute idealist view of reality.

The Necessary, the Possible, and the Impossible

The Necessary

Many have argued that a pluralistic reality comprises not only concrete individuals but also universals, a type of abstract object invoked to explain both our cognitive grasp of categories or types and our apparent references to such types or kinds. In the Platonic dialogues, the *Republic* and the *Symposium*, for example, Socrates contrasts the many instances of or the occurrences of beauty, with the beautiful itself, where we are to understand the latter as the pattern or form or the universal. Every particular beautiful thing or object exemplifies to one degree or another the universal *beauty*. The uniquely identifying feature of universals is that they can be multiply instantiated or exemplified by physical objects or events; the universal wholly occurs in many places at once.

Very briefly, the realist about universals argues that invoking universals is necessary in order to explain our cognitive ability to identify different individuals as being of the same type or category. We “grasp,” according to the realist, that the same universal is instantiated by each of the different individuals. This attribute agreement argument is but one of the arguments deployed by realists about universals.

One interesting feature of universals is that if they exist, they exist necessarily. What is the significance of this “necessarily”? Suppose for a

moment that our world had been different than what it is – perhaps the tectonic plates had different shapes and our mountain ranges were different. Or suppose that Shakespeare never wrote *Hamlet*, or there were eleven not ten amendments in the US Constitution Bill of Rights. To say then that universals exist necessarily (if they exist at all) is to say that no matter what the course of events might have been, no matter how slightly or dramatically different things might have been, universals would still have existed. That is, if realists are right about the existence of universals, then no matter what the world might have been like, universals would have existed in any of those alternate scenarios or “different worlds.”

One simple explanation of this claim is to compare universals to numbers. In any of our alternate courses of events, something would have existed, and thus there would be a *number* of the things that exist. But the same can be said of the *patterns* or *types* exhibited by those objects existing in these different worlds, however many there are. And, as Bertrand Russell once observed about universals, once you’ve acknowledged the existence of one, there seems no sound reason for justifying the existence of any universal.

There is much more that should be said about realism and nominalism. But what about this *different worlds* idea?

Possible Worlds

G. W. Leibniz, as part of his theodicy, claimed that God created the best of all *possible worlds*. In the latter half of the twentieth century, the concept of possible world was given a rigorous treatment by Saul Kripke, enabling more rigorous explanations of modal claims, or the logic of possibility and necessity (e.g., Kripke 1959). Possible worlds are complete alternative ways things might have been. More formal definitions are available, but this will serve here. Amelia, suppose, *actually* is an attorney in Boston. But it makes sense to say that Amelia might have been a surfing instructor in Honolulu. This “might have been” is recast in the language of possible worlds: there is some possible world in which Amelia is a surfing instructor. Possible worlds also serve to

explain the semantics of necessary truths, e.g., to say that “all bachelors are unmarried males” is to say that *in every possible world*, all bachelors are unmarried males.

The explanatory power of the possible worlds framework is widely accepted. But the question quickly arises about the ontological status of possible worlds. Or, in what sense, if at all, are possible worlds real?

One view, espoused and defended by David Lewis, is that possible worlds are real, concrete entities, yet physically inaccessible to us (Lewis 1986). These worlds exist and are populated by various objects, some very much like the objects in this world. In one of those possible worlds, for example, there is someone very much like me who instead became a fashion photographer. That counterpart of me is a real, tangible being; it is in virtue of this “possible world fact” that this modal assertion is true: “Jack might have been a fashion photographer.” Which world is the *real* world? Which is the *actual* world?

A consequence of *possibilism*, as the view is known, is that “actual” is a relative or indexical term. Each possible world, from its “point of view,” is the actual world. “Photographer Jack” is actual – in that possible world. Of course, from our viewpoint, this world is the actual world.

Lewis’ offers as his principal reason for thinking such worlds exist – apart from their explanatory power – is that our discourse about possible worlds commits us to their existence. We can compare this to number theory or physical theory. Theories talk about or refer to, e.g., numbers or electrons. And, the *realist attitude* toward those theories is that the best explanation of their truth and explanatory success is that the objects referred to in such theories *actually* exist. A more technical gloss of this argument: since we quantify over possible worlds, we should accept that they exist.

This view may seem fantastic to some at first glance. Notice, however, the many-worlds interpretation of quantum theory. This view asserts that, in fact, there is more than just our universe; rather a multiverse exists, comprising an ever-increasing number of universes, many very similar to ours, yet they are inaccessible to us.

The most widely held alternative to Lewis' view is *actualism*, a term coined by Robert M. Adams (Loux 1979; Divers 2002). Actualism holds that there is only one actual world – ours – and that possible worlds should instead be treated as abstract objects, like sets or numbers, or, perhaps, universals. One advantage of actualism, critics claim, is that we are better able to make sense of claims such as “Jack might have been a fashion photographer.” How, critics wonder, can reference to some different being, who may differ wildly from me, explain anything about the course of events in my life? Indeed, critics are suspicious that we are even able to refer to such counterpart beings.

As with all of the issues about reality and metaphysics, the literature on the ontological status of possible worlds is extensive, and some of it very technical. There are, however, readable introductions to these topics (e.g., Lowe 2002, Chap. 7).

Of course, it is an easy step from here to a lurking there, namely, does reality include *impossible worlds or beings*?

Impossibilia

Meinongianism is the view that there is some object correlated with every combination of properties, including, strikingly, contradictory properties. Thus, impossible objects – objects having contradictory properties – are beings. Yet impossible objects are nonexistent objects. Only objects in our world exist.

The historical roots of Meinongianism trace to Austrian philosopher and psychologist, Alexius Meinong (1853–1920), who sought to explain the nature of the objects of thought or intentional objects. Since thoughts are necessarily always about “something,” there must be an object for every thought, including thoughts about nonexistent objects such as Santa Claus or unicorns. This view opens the door to thinking about nonexistent objects.

Contemporary Meinongians offer different theories, often tied to appropriate logics for handling “Meinongian objects.” Here a sketch of but one of these views will have to suffice. Graham Priest holds that, in addition to possible

worlds, there are *impossible worlds*. We can talk about nonexistent objects, such as the winged-horse Pegasus of Greek mythology, because Pegasus “exists” in at least one possible world. (There will in fact be many possible worlds in which Pegasus exists.) This winged-horse is, however, a nonexistent object because it is not part of our world, the actual world.

Priest's strategy of impossible worlds also allows for the “being” of impossible objects. Recall that the Meinongian holds that any combination of properties has some correlated object that “encodes” the combination. How are we to understand, say, a round square? Our ordinary understanding is that there are no round squares, because the very notion is self-contradictory. Priest holds that impossible worlds are worlds in which the principle of noncontradiction does not obtain. Round squares thus find their home in impossible worlds because in such worlds, they are not self-contradictory. Now, we cannot consider here the details of the logic (paraconsistent logic) of these impossible worlds. But paraconsistent logic enables us to say something about impossible worlds and the impossible objects that are found in such worlds.

Clearly this is a dramatic extension of our notion of reality. Round squares thus have a type of being or reality. Indeed, Priest has remarked that eventually the Meinongian view will prove closer to the truth than our more “conservative” view (Priest 2016). From the world of ordinary experience to impossible worlds with impossible beings, theories of reality are rich and diverse. Perhaps this brief overview serves to give some sense of that richness.

Summary

This overview hopefully illustrates the richness of the philosophical consideration of the nature of reality. We may begin from common sense – what seems obvious to us in our daily interactions with the world. Yet the most casual reflection opens the door to metaphysics. And once it is claimed that “Reality is nothing but the physical” or “Reality is one” or “The Idea actively

structures the nature of reality,” we are headlong into metaphysics. Perhaps method and metaphysics are inseparable: one’s metaphysical view is tied to the way in which one goes about inquiring into the nature of reality. Different methods may then in part explain the differences in accounts of the nature of ultimate reality. Yet methods help make the questions more precise and the lines of inquiry more fertile. New developments in logic yield new ways of thinking about the necessary and the possible. New conceptualizations of “idea” or “universal” lead to new and richer theories of idealism or realism about universals. Progress in metaphysics is in part due to the richness of the subject and our finding new ways to conceptualize or think about it. “Is there only one object? Or many?” “Is there a limit to the possible?” The scope of such questions hints at their depth. And their depth promises a continued richness and vibrancy still newer and more encompassing theories of reality.

Cross-References

- [American Pragmatism](#)
- [Constructivism](#)
- [Emergentism](#)
- [Possible in Sociology](#)
- [Possible Worlds](#)
- [The Possible in the Life and Work of Alfred North Whitehead](#)

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Rhetoric

Sara Greco and Sabrina Mazzali-Lurati
Università della Svizzera italiana (USI), Lugano,
Switzerland

Abstract

Rhetoric is a creative means to design and organize discourse in order for it to be persuasive but not manipulative. Often, the word *rhetoric* is used synonymous with stylistics; but in fact, rhetoric includes the whole process of designing a communicative intervention in response to an *exigence* that emerges in the context. As such, rhetorical discourse is characterized by a specific orientation in relation to its audience, by the importance of the character (*ethos*) of the speaker, and by sound arguments. In particular, at the heart of rhetorical discourse lies the process of *inventio*, that is, exploring possible discursive worlds and identifying appropriate arguments based on sources known as *loci*. Rhetorical discourse has several applications in contemporary communication; prime examples are found in political discourse, business communication, storytelling, and advertising.

Keywords

Rhetoric · Argumentation · Persuasion ·
Business communication · Text stakeholder ·
Loci · Topoi · Audience · Ethos · Creativity ·
Invention

“A hundred years ago, creativity was seen primarily as the province of artists (poets, painters, composers, and of God). Nowadays, everyone is expected to be creative” (Jones 2012, p. 1).

Introduction

A quick search of the British National Corpus, a 100 million word corpus of written and spoken English, reveals that “rhetoric” (occurring 943 times) is oftentimes collocated within negatively

connoted phrases, such as “mere rhetoric,” “just rhetoric,” and “if it is to mean anything more than rhetoric”; or is intended in a negative sense, for example, when “rhetoric” is contrasted with “reality” as in “the tensions between rhetoric and reality are highlighted.” Looking at these collocations, one could infer that rhetoric is a bad use of creativity – a clever use of words to cheat and induce others to do something that does not really correspond to facts. In its origin, however, the word *rhetoric* did not have any such negative meaning. Rhetorical studies originated as a first form of communication studies (Rigotti 1998), and there have been “over two thousand years of reflection in the west” on rhetoric (Fahnestock 2011, p. 6). In his *Rhetoric*, Aristotle states that rhetoric is a *means*; as such, it is not the fault of rhetoric itself if it is put to bad ends – human beings are to blame. Aristotle continues, “true and better [facts] are by nature always more productive of good syllogisms and, in a word, more persuasive” (*Rhetoric* I, 1354b–1355a, transl. by Kennedy 1991, p. 35). Thus, in its original sense, rhetoric constitutes a good use of the possible in discourse, i.e., the art of identifying the various means that can be directed toward reasonable persuasion – based on *ethos* (the orator’s character), *logos* (rational means of persuasion), or *pathos* (the emotive orientation toward the audience and its feelings). Rocci (2017, p. 89), in discussing the work of John of Salisbury, observes that a positive understanding of rhetoric existed in medieval reflection on the liberal arts (Rocci 2017: 92ff).

Reflection on rhetoric originated in ancient Greece around the fifth century BC, in a context in which words held enormous power in the democratic system of Athens. The traditional domains for rhetoric were political, juridical, and epideictic (ceremonial discourse, used to praise or blame someone); each of these domains corresponded to a type of decision that citizens were discussing together in their civic life. The reflection on rhetoric, thus, involved a reflection on audience, persuasive communication, and a basic conceptualization of the communication domains in which public speaking was important (Murphy et al. 2013). Within education, especially in North

America, this aspect has persisted in the tradition of debate handbooks, which teach the fundamentals of argumentative/rhetorical persuasion, with a focus on the domains of public discourse, policy making, and other forms of civic engagement (see Ziegelmueller and Kay 1997; Rieke et al. 2005; and, earlier, the English author Whately 1828/1963).

In the last century, reflection on rhetoric formed part of the renaissance of argumentation studies, traditionally dated to 1958, thanks to Perelman and Olbrechts-Tyteca's (1969/1958) treatise significantly entitled *La nouvelle rhétorique* (*The new rhetoric*), published in the same year as Toulmin's *The uses of argument* (1958). Perelman and Olbrechts-Tyteca (1969/1958) capitalize on ancient rhetoric and apply it to the study of argument-based persuasive discourse in modern societies, with a particular focus on the legal domain. They start from the assumption that reason and rhetoric are connected, and that, in contrast to the evolution of logic since Descartes, reason is not "entirely incompetent in those areas which elude calculation" (Perelman & Olbrechts-Tyteca (1969/1958, p. 3). Rhetoric is the use of reason to form judgments on subjects that are plausible, if noncalculable. As such, rhetoric contains an opportunity: We do not need to "abandon ourselves to irrational forces, instincts, suggestion, or even violence" (ibid.); we can use reason in discourse. The same positive interpretation of rhetoric continues in contemporary studies, which theoretically and empirically examine rhetorical situations and propose rhetorical models of argumentation (cf. Tindale 1999, 2004; Zarefsky 2014).

Rhetoric and Possible Worlds: Where Rhetoric Is Most Creative

A traditional connection between rhetoric and creativity is readily found in the area of rhetorical stylistics (Lat. *elocutio*), i.e., style, or the form or "dress" that a text takes in order to be as persuasive and captivating as possible. In recent centuries, the interpretation of rhetoric as stylistics has been almost inescapable; not least because, as

Fahnestock (2011, p. 7) observes, of all the parts of rhetoric, "style is arguably the most implicated in the others, since linguistic choice is the point of realization for the rhetorical precepts and theories belonging to the other canons." Rhetorical stylistics not only famously concentrates on the persuasive function of figures of speech, but it also covers other levels of text production such as word choice, the construction of sentences, arguments, prosody, and punctuation. Additionally, it includes the rhetorical construction of speaker and audience, and further aspects linked to how discourse is related to the communication context (Fahnestock 2011), including, for example, non-verbal behavior (Lat. *actio*, for some discussion on this term in ancient authors, see Balbo 2018). Rhetoricians study different contexts in which style is important, such as scientific or political discourse and politics (Fahnestock 1999; Zarefsky 2014; Herman 2017). In all these contexts, the emphasis is on how the text achieves the intended communicative goal of persuasion through rhetorical means. Unlike in literary stylistics, in which scholars "attend to texts (fiction, poetry, drama) prized ultimately for their aesthetic value" (Fahnestock 2011, p. 12), rhetorical stylistics looks for functional *regularities* of language and communication (ibid.). It is a different kind of creativity: Creativity in rhetorical stylistics is connected to the capacity for persuasion and the adaptation of discourse to the audience, with an emphasis on the verbal strategies.

Without doing an injustice to this important area, there are other at least equally important aspects through which rhetoric and creativity are connected. We will illustrate these aspects in the following sections, arguing that rhetoric could be seen as a creative exploration of possible worlds, which could be made real if the audience is persuaded by a well-founded speech.

Rhetoric as a Response to an Exigence

Creation always happens in a context. Contrary to what one might assume, possibility arises in reality. Effective messages can be invented only within the perimeter of a concrete situation, with defined goals, rules, and constraints (Testa 2003, p. 107). Far from being opposed to "reality,"

rhetoric stems from the functional interaction between human beings and the environment (Bitzer 1980, p. 21). Invention is triggered by something that is other than it should be in the environment, and it is inspired by the goal to change it. Therefore, rhetorical discourse is a creative exploration of possible worlds and reasoning about alternatives and about “desires, requirements, future possible developments, opportunities and risks, but also (...) counterfactual conditions and consequences, wishes and fictional states of affairs” (Rocci 2009, p. 16). Such exploration is necessary to connect “what *is*” to “what *could be*.” Not by chance, this is what Lloyd Bitzer, in his seminal article on “The rhetorical situation” (1968), identifies as the core of rhetoric. This view, which Bitzer calls *situational*, distinguishes his approach to rhetoric from other approaches, such as the stylistic or scientific approach (1980, pp. 21–22). Rhetorical discourse “functions ultimately to produce action or change in the world” (pp. 3–4), and it originates as “a response to a situation of a certain kind” (p. 3), “which invites utterances” (p. 4), namely a *rhetorical situation*. A rhetorical situation is “a natural context of persons, events, objects, relations, and an exigence which strongly invites utterance” (p. 5). The exigence is pivotal: It is “an imperfection marked by urgency; it is a defect, an obstacle, something waiting to be done, a thing which is other than it should be” (1968, p. 6) and which can be positively modified (“completely or partially removed”, p. 6) by means of discourse that engages the audience “in thought and action” (1968, p. 4): In order to change the current state of affairs, the speaker will try and engage his/her audience to doing something; persuasive discourse is needed to this aim. Together with the rhetor (a term that Bitzer uses interchangeably with “speaker”) and his/her discourse, the rhetorical situation supplies the requirements for a “fitting response” (Bitzer 1968, pp. 10–11, Bitzer 1980, pp. 36–38): It “dictates the purpose, theme, matter, and style of the response” and “prescribe [s] the response which fits” (p. 10). Bitzer’s concept of rhetorical situation gave rise, immediately following the publication of his original essay, to debate and criticism. From the 1970s onward,

different rhetoricians have discussed the fact that the exigence and the other elements of the rhetorical situation are conceived as “located in reality” (1968, p. 11). The controlling/pivotal role of the exigence has been accused of being deterministic and overshadowing the creative power of the rhetor and, in a postmodern view, of the audience. However, this was not Bitzer’s position, as he explained in a later and more detailed articulation (1980, cf. Young 2001). A rhetor’s creativity lies in his/her ability to conceive and produce a discursive response capable of leading the rhetorical audience to act and positively modify the exigence, by adequately taking into account and dealing with the constraints (1980, pp. 23–24). This is not always straightforward, especially when rhetor and audience perceive different rhetorical exigences (1980, pp. 29–31).

Audience in Rhetoric

Thus, rhetorical discourse does not only originate as a response to an exigence, but it is also constructed with an orientation toward its *audience*, which the speaker wants to act in order to modify or “resolve” the exigence. Since the ancient days of rhetoric, audience has been conceived as a central factor of rhetorical discourse. When illustrating epideictic rhetoric, Aristotle observed that “[w]e must also take into account the nature of our particular audience” (Ret. I, 9), including the differences existing between the members of the assembly, particularly the differences in character (Quintilian, Inst. Or. III, 8, 38, see Winterbottom 1970). The ability to adapt to the audience, by taking into consideration the opinions of the hearers and speaking differently to different segments of the audience is an essential trait of eloquence (Cicero 1942).

The crucial importance of the audience for rhetoric is also one of the main elements highlighted in modern and contemporary rhetoric. Consisting of the persons capable of bringing about the positive modification of the exigence controlling the situation (Bitzer 1968, p. 8), the audience is a constitutive element of Bitzer’s rhetorical situation. Perelman and Olbrechts-Tyteca (1969/1958, p. 17) observe that “It is not enough for a man to speak or write; he must also be

listened to or read”, and that often knowledge of an audience must be anticipated in order for the speaker to adapt his or her speech to that audience (Perelman and Olbrechts-Tyteca (1969/1958: 23ff). More often than not, rhetorical discourse addresses “a *composite* audience, embracing people differing in character, loyalties, and functions” (1969/1958, p. 21, our emphasis). Tindale (2015, p. 19) observes that any theory of argumentation should be developed around the concept of audience, and his book *The philosophy of argument and audience reception* is entirely devoted to substantiating this claim. Audience often has a complex structure and requires the speaker to maneuver strategically in accordance with a complex *audience demand* (van Eemeren 2010). Notably, while in interpersonal communication a speaker might know his/her audience well, what often happens in communication to a broader public is that the speaker will make a projection of the different segments of the composite audience.

As illustrated by Jasinski (2001), different scholars have investigated multiaudience rhetorical situations in order to understand how the rhetor can effectively deal with all the different characters and expectations of the different components within the audience (cf. Benoit and D’Agostine 1994; Myers 1999). Among these, the *text stakeholders model* (Palmieri and Mazzali-Lurati 2016) provides a general theoretical framework and categories for the analysis and production of rhetorical texts. This model enables the identification and description of the different components of the audience, typically pertaining to public communication messages; it also allows an analysis of the rhetorical and argumentative strategies deployed by the speaker/writer in order to deal with each component effectively. *Stake* is the core concept in the model: The audience of a text is composed of *text stakeholders*, i.e. individuals or groups that “hold a particular interest, which they expect the text will contribute to fulfilling” (Palmieri and Mazzali-Lurati 2016, p. 481). The notion of the *text stakeholder* arises from the integration of concepts elaborated in different disciplinary fields (Goffman 1981; Rigotti and Rocci 2006; Freeman 1984). Within the text, stakes take the form of *issues*, which the

text is expected to resolve (Palmieri and Mazzali-Lurati 2016, p. 483): Different text stakeholders implicitly or explicitly raise different issues in regard to the text, and the rhetor has to design and produce a message responding to all of the issues raised. Different categories of text stakeholders can be distinguished: The direct *addressee* is “the one who is institutionally expected to be the main mediator of change” (p. 480), while *unaddressed ratified readers* “are not directly addressed by the writer, who however should acknowledge their presence as relevant” because, given their institutional or personal role, “they could raise an important side issue, or, if persuaded on the main issue, they could represent a conduit for persuading the addressee” (p. 480). For *meta-readers*, such as gatekeepers and regulators, the stake “focuses more directly on the text as the by-product of the writing process.” Gatekeepers “decide whether or not to diffuse the text (or part of it) to a larger public”; regulators establish “whether the text can be (legally speaking) published or not, given the legally established requirements disciplining its content, form and style” (p. 480). Finally, there may be *over-readers*, i.e., individuals or groups who “are not entitled to take part in the communicative interaction” and whose “stake in the interaction field is not relevant in respect to the rhetorical exigence” (p. 479).

Topoi-Loci and the Art of “Inventio” as the Most Creative Part of Rhetoric

There is virtually no other area of discourse and communication in which reason and creativity, reflection, and intuition meet so closely and are so tightly interconnected, as the area traditionally named *inventio* in Latin (invention), i.e., the art of seeking out reasons. Renaissance humanist Ralph Lever, in one of the first treatises on rhetoric in English (*Arte of Reason*, Lever 1573), modeled upon Aristotle’s *Rhetoric*, translated *inventio* into the English compound term *witcraft*, which we might in turn translate into “the art of finding astute reasons.” This compound term makes use of “craft,” which is often associated with art and creativity – or, in other words, the exploration of possible worlds; while the term “wit” has a clear connection to the use of reason in an astute way.

Within the discipline of argumentation studies, the process of invention has been explored through the study of *topoi-loci*, i.e., literally, the “places” from which arguments are drawn. In this original metaphor introduced by Aristotle and then conceptually developed in the subsequent Latin, medieval, and postmedieval studies, lists of *topoi-loci* are sketched out with the practical aim of giving support to an arguer who needs to find sound reasons to support his or her claims or standpoints. *Topoi-loci* – for example, “locus from authority,” “locus from efficient cause,” and “locus from analogy” – indicate the sources from which arguments can be constructed.

But what do sterile, abstract structures of arguments such as *loci* have to do with creativity? When you want to support a standpoint, is it not better to just sit down and think – intuitively? This question presupposes that creativity should be linked to instinct, or free thinking; but this is not necessarily true (section “[Rhetoric as a Response to an Exigence](#)”). *Loci* can support creativity because they provide a map of semantic relations, and a map of reasoning connections – and this can assist the arguer to ask the right questions and, thus, find the right arguments. Renaissance humanist Rodolphus Agricola saw *loci* as “*capita rerum*,” i.e., the main semantic nodes (Lat. *capita*, or “heads”) that mirror reality (Lat. *res/rerum*); by studying these nodes and their relations, one will be helped to construct one’s reasoning (Agricola 1539). True, *topoi-loci* are abstract nodes and connections; these abstract connections need to be fleshed out with real premises, shared starting points to become the bone structure of real arguments (Rigotti and Greco 2019). In this way, a seemingly abstract and dry area of rhetorical or argumentative discourse, such as inference, reveals its inner creative nature.

The role of *topoi-loci* in rhetorical creativity has been considered in a series of studies by argumentation scholars who examine contemporary rhetoric, often considering presidential and other political speeches in the USA and elsewhere. It is worth mentioning here the works by David Zarefsky (see Zarefsky 2014). The studies within this tradition demonstrate the *topoi-loci* on which some important speeches have been based and evaluate their validity, including reflecting on

fallacies contained therein; in this sense, the study of rhetoric is not only a description of the strategies used but also an evaluation of their validity. Zarefsky’s analysis (2007) of Colin Powell’s speech to the United Nations on February 5, 2003, concerning Saddam Hussein’s possession of nuclear arms is a case in point. Zarefsky highlights the rhetorical structure of the speech and shows how the speech was persuasive because of Powell’s personal *ethos* (authority) at the time and because of judicious use of the *argument* (locus) *from ignorance*, which allowed Powell to use scant evidence to instill the suspicion that Iraq possessed weapons of mass destruction because no evidence to the contrary was present. Zarefsky reconstructs and criticizes the use of these *topoi-loci* from authority and from ignorance as rhetorical strategies that were persuasive in this case but that were ultimately not well-founded, particularly in the case of the argument from ignorance – something that Powell himself later regretted (Zarefsky 2007). This case is exemplary of studies in argumentative rhetoric, which are concerned not only with style but also with profound logical strategies, and not only with persuasion but also with truth and evidence.

Business Rhetoric: An Example of Creative Rhetoric in Contemporary Communication

Because argumentative discourse is not something that is the preserve of an élite but is widely requested in today’s professional world of communication and beyond, the study of *topoi-loci* and of rhetoric in general has an educational value (Kienpointner 2012). Rhetoric is important in enhancing both what is called “small c creativity,” i.e., everyday creativity, especially in relation to verbal and multimodal productions, and “big C Creativity,” which “refers to the creativity of world-changing works of art or scientific discoveries that alter the way people think about a certain problem or domain” (Jones 2012, p. 2). Business activity is a typical sphere of “small c creativity”: It is dotted with – even constituted of – a series of texts and messages, often dealing with practical questions or problems, belonging to routine and

common genres, which, however, challenge the manager/writer's creativity to find the "fitting response." Therefore, for decades, rhetoric, rhetorical analysis, and rhetorical criticism have been integrated in the practice of and research into organizational and business communication and management. The origins of organizational and business rhetoric, and the variety of developed analyses, themes, approaches, and streams of research, have been thoroughly reviewed and discussed in numerous complementary works (cf. Meisenbach and Mcmillan 2006, Browning and Hartelius 2018, Cheney et al. 2004, Lee 2019).

Typically, communication in organizations, especially commercial companies, involves multiple audiences (Cheney et al. 2004; Huettman 1996; Schriver 1992; Hoffman and Ford 2010). When producing organizational messages, managers need to face these audiences and communicate strategically with them for the sake of the organization's success. Managers need to produce persuasive communicative messages "that reflect the organization's needs and goals" (Browning and Hartelius 2018, p. 88) and that take into account the interests and issues raised by all the different text stakeholders. As Browning and Hartelius (2018) put it, "persuasion is part of an organizational leader's role" (p. 88) and this persuasive element of managers' activity turns them into rhetors. A prime example of this is (digital) storytelling in organizations, which counts as an example of small c creativity. Storytelling persuades (Bendoni 2017, p. 142) or influences (Bendoni 2017, p. 143) the reader/listener. As we may say, it has a clear rhetorical and argumentative function based on the "persuasive power of words and images" (Bendoni 2017, p. 143), even though one might observe that studies on storytelling tend to neglect a more *critical* attitude that the audience or listener might and should adopt in argumentative rhetoric (Rocci 2017, p. 99). Another typical small c creativity rhetorical activity in business can be found in advertising. Studies of rhetoric and argumentation in advertising posit the need to overcome the "verbal/visual divide" (Tseronis 2018) and include more dimensions than just the verbal mode (cf. Groarke and Kišiček 2018). Multimodal tropes and figures in advertising – for instance, metaphor

(Pollaroli and Rocci 2015) and metonymy (Rocci et al. 2018) – are analyzed as "patterns of thought and reasoning" (Kjeldsen 2012). From a rhetorical viewpoint, these patterns are related to different topoi-loci, which are activated in rhetorical discourse (Pollaroli and Rocci 2015); together with the verbal content, they provide the viewer with cues about the inference path proposed by the text and maximize the rhetorical effectiveness of the argument advanced. Rhetorical topoi-loci can equally be effective as means to create advertising campaigns. For example, Marsh (2007) discusses the causal topoi-loci (as derived from Aristotle's reflection on different types of causes) and their role within "a detailed, systematic heuristic for product analysis, an indispensable part of idea generation" in advertising copywriting (Marsh 2007, p. 183).

Ethos, *logos*, and *pathos* (section "Introduction") are considered prominent rhetorical tools in organizations, which are applied to the analysis of organizational messages. For instance, Brennan and Merkl-Davies (2014) analyze the use of the three rhetorical appeals in the press releases relating to the 2011 "Detox" campaign, a public controversy between Greenpeace and international sportswear/fashion firms about the use of hazardous chemicals in the companies' supply chains. Hyland (2005) illustrates how meta-discourse contributes "to creat[ing] the rational, credible and affective appeals" (p. 75) in letters by CEOs in annual reports. Hyland's purpose also has the practical side of "help[ing] students of academic and business communication to develop a more effective rhetorical and verbal repertoire to better operate in the professional domains" (p. 85). Several other studies relating to different areas of organizational and, more particularly, business activity have used *ethos*, *pathos*, and *logos* as analytical tools to provide useful insights for text production. Green (2004), for instance, observes the role of discourse and rhetoric in the diffusion of new managerial practices and proposes a rhetorical theory of diffusion, which describes how "[p]athos, logos, and ethos appeals may combine to shape the speed and extent of diffusion" (p. 660) and identifies the most effective combination and sequence. Tirdatov's (2014) analysis of a sample of successful Kickstarter crowdfunding

campaigns aims to clarify how appeals to ethos, pathos, and logos can be used to create effective crowdfunding pitches, capable of persuading donors. Higgins and Walker (2012) examine how the three persuasive appeals are used by companies in social/environmental reporting to “isolate the role of persuasion in discursive struggle [...] about the ‘appropriate’ role of business in society” (p. 195).

In studies on organizations, ethos occupies a prominent position in relation to the broad issue of image and reputation. As Baumlin and Scisco (2018, p. 201) put it, ethos is revealed in discourse, but it is also constructed and “much organizational rhetoric aims at creating, maintaining, and occasionally repairing corporate image” (ibid.). The connection between rhetoric and corporate reputation has become a fertile area for studies of corporate ethics. The Aristotelian concept of ethos with its three components (virtue, practical wisdom, and goodwill) is taken as a reference point and is used as a tool to describe and conceptualize corporate reputation (cf. for example, Shanahan and Seele 2015). For example, Flyvholm Jorgensen and Isaksson (2008) analyze a number of advertisements from financial institutes in order to highlight how rhetorical strategies and appeals are used to build credibility and reputation. They propose a “reconceptualized and operational model of the construct of credibility (ethos)” (p. 366), and they show that financial advertisements in international magazines largely rely on the appeal to expertise, suggesting that there is a wide range of further rhetorical strategies that remain unused. Kallendorf and Kallendorf (1985) show how the use of figures of speech in internal and external business communication texts particularly contributes to ethos, by projecting “the image of a thoughtful and analytical person whose ideas deserve to be taken seriously” (p. 43). The same authors, in a later study (Kallendorf and Kallendorf 1989), put forward an “Aristotelian theory of programmatic ethics based in and appropriate to the rhetoric of business” (p. 55). Challenging a misrepresentation of Aristotle’s rhetoric as a technique which can be vulnerable to manipulative use, they highlight that, in Aristotle’s view, language is “a carrier of values”; accordingly, it generates

“arguments of probable validity” and “invites rhetorical scrutiny,” based on “the three rhetorical means of persuasion” and “rel[ying] on discussion and debate” (p. 57).

Summary

In sum, rhetorical discourse arises in response to an exigence that emerges from the communication context in which the speaker finds him or herself. The speaker will explore possible worlds to persuade his/her audience and fill the gap between how a given situation is and how it could be; hence, rhetorical communication encompasses a process of exploration of possible worlds and paths to effectively change reality. We have observed that rhetoric concerns the design and realization of communicative interventions that are persuasive but also well-founded. As such, rhetoric includes the three fundamental elements introduced by Aristotle in his *Rhetoric*. First, is the speaker’s character (*ethos*), which bears an influence on how the message is perceived. Second, is the orientation in relation to *audience*, including a careful attention to different segments of complex audiences. Third, is a well-founded *repertoire of arguments*, which is created with the help of *topoi-loci*, the supporting structures of inference. As demonstrated by the examples proposed above, these aspects are crucial in a variety of contemporary communication domains, which range from political speeches to business advertising and many others.

Cross-References

- [Dialectics](#)
- [Invention](#)

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Risk

Martina Vacondio¹ and Stephan Dickert^{1,2}

¹Department of Psychology, University of Klagenfurt, Klagenfurt, Austria

²Department of Marketing, Queen Mary University of London, London, UK

Abstract

Risk is generally understood as a possibility of an event with potentially negative consequences. In order to judge the risk of an event or activity, individuals need to perceive and mentally represent this possibility and the associated negative consequences. It is therefore often more correct to talk about risk as a subjective construct. Subjective risk perception has been broadly studied, with an emphasis on the acceptance of different kinds of dangers at both individual and societal levels. Research focuses on such things as the

cognitive and emotional characteristics of risk perception (i.e., the psychological approach) as well as on the sociocultural aspects of risks (i.e., cultural theory). This chapter discusses the different layers that characterize the definition of risk and examines some of the scientific approaches to the study of risk. It also includes an analysis of the research methodology on risk perception and highlights the connection between risk and *the possible*.

Keywords

Risk perception · Subjective risk · Risk as analysis · Risk as feelings

Definition

[T]here is no such thing as “real” risk, or “objective risk”. (Slovic 1999, pp. 63)

The definition of risk is complex and far from univocal. In fact, different definitions of risk exist both in the scientific world and in the layperson’s understanding of the concept. A careful analysis of risk as a concept uncovers different layers regarding its meaning, created by the different contexts in which it has been studied and the ways in which it has been characterized, conceptualized, and operationalized over the years.

Laypeople usually associate the word “risk” with the possibility that an unpleasant or unwelcome event can happen. From a scientific perspective, risk is defined by taking into consideration all the elements that compose the idea behind the word “risk,” providing a complete explanation of the concept. The Stanford Encyclopedia of Philosophy offers an example of technical definitions widely used across scientific disciplines. Accordingly, the first element can be conceptualized as risk being a *consequence*; it is described as “an unwanted event which may or may not occur.” For example, a fatal car accident is a risk that can occur when driving a car under the influence of alcohol. Another definition frames risk as a *probability*, describing it as “the probability of an unwanted

event which may or may not occur.” An example of this conceptualization of risk would be to state that the probability of being involved in a fatal car accident when drinking and driving is 45%. Those two definitions are part of a bigger categorization of risk, specifically *risk as analysis*, which “brings logic, reason, and scientific deliberation to bear on hazard management,” and *risk as feeling*, which “refers to our fast, instinctive, and intuitive reactions to danger” (Slovic et al. 2004, p. 311). These two macro-categories belong to the idea that we perceive reality in at least two different ways (Epstein 1994; Evans 2008; Kahneman 2003; Stanovich and West 2000). One way is intuitive and fast, more primitive, and belief-based. The other is rational, more recent, and slower. The perception of risk and its interpretation depend on how information is processed.

Another characterization of risk, referring back to the opening quote, differentiates between objective and subjective risk. Objective risk is described as an actual probability of an unwanted or unpleasant event, and this probability is usually quantifiable. For example, the actual statistics regarding refugees drowning while trying to cross the Mediterranean Sea in order to come to Europe provide an objective measure of risk. The survival of these refugees depends on the type of boat, the winds, how rough the sea is, and the probability of finding a safe place to land, among other factors. Although the probabilities and the specific consequences of these aspects are calculable, we, as humans, almost always give a subjective value to them. Indeed, the perception of risk depends on how the risk is framed and how subjectively it is perceived. An example of the subjectivity of “objective risks” is given below. The United Nations High Commissioner for Refugees report that the absolute number of refugees that died trying to reach Europe by crossing the Mediterranean Sea diminished from 2016 to 2017 (UNHCR n.d.). This statement could lead to the conclusion that trying to cross the sea became less risky. However, data also show that the number of drowned refugees per number of people that tried to migrate increased in the same year (see section ► “Crisis of the

Future”). This statement, on the other hand, leads to the conclusion that crossing the sea became riskier. The two statements are both factually true, but they elicit a different perception of the same risk. It is clear, then, that there is no such thing as objective risk (Slovic 1999), and it is more correct to use the word risk in its subjective connotation. Specifically, the subjective risk concerns personal thoughts, beliefs, and values that determine how we perceive risk and how we subjectively judge risky situations.

Subjective judgments of risks occur frequently. Individuals must assess the threats with which they come into contact every day. However, when making these assessments, most people do not have the appropriate knowledge, skills, or time to objectively deal with those risks (see section ► “Uncertainty”). Instead, they adopt subjective assessments based on information cues that allow people to draw conclusions. These cues refer to the characteristic of the risk itself, exemplified by several dichotomies when judging a risky situation (Slovic et al. 1985). For example, the perception of risk varies if people expose themselves *voluntarily* to the risk or if the exposure is instead involuntary, and if the risk is *chronic* or *catastrophic*. Moreover, subjective risk assessments depend on whether the risk is seen as *common*, such that people are used to it and react calmly in front of it, or *dreadful*, causing people to respond in a visceral and impulsive way. Other factors influencing subject risk assessments include whether the risk is seen as *certainly fatal* or *certainly not fatal*, if it is *known* or *not known* to the exposed, if it is *immediate* or *delayed*, *known to science* or *not known to science*, *controllable* or *uncontrollable*, and *new* or *old*. These characteristics make it possible to create profiles of the perceived risk and compare them on different dimensions.

Different Theoretical Approaches to the Study of Risk

The different definitions of risk are accompanied by different schools of thought on risk perception. Two relatively prominent approaches focus

on how individuals perceive risk (i.e., the psychological approach) and how risk is influenced by culture (i.e., cultural theory). In this chapter, we will predominantly focus on the psychological approach. However, we first briefly describe and discuss the central tenets of the cultural theory of risk.

The main goal of cultural theory is to illustrate that the study of the perception of risk must necessarily take into consideration the social and cultural context. In the frame of this theory, risk perception and risk acceptance are strictly related to cultural adherence and social learning. Thus, people’s value system and judgments belong to social groups and do not happen in a social vacuum (see sections ► “Values” and ► “Norms”). In this frame, risk is defined as “a joint product of knowledge of future and consent about the most desired prospect” (Douglas and Wildavsky 1983, p. 5). The framework of cultural theory is based on the group-grid theory. It posits two dimensions (grid and group) to create typical social positions to represent most of the cultural diversity (Mamadouh 1999). The underlying hypothesis is that these two dimensions have a significant impact on people’s worldviews. *Group* is defined as “the outside boundary that people have erected between themselves and the outside world” (Douglas and Wildavsky 1983, p. 138). This signifies the belongingness of an individual to social groups and his or her degree of involvement in them. *Grid*, instead, refers to “all the other social distinctions and delegations of authority that they use to limit how people behave to one another” (Douglas and Wildavsky 1983, p. 138). This indicates how restrictive and regulated a social context is. The two dimensions then generate four types of social environment or worldwide views that represent the four possible filters to a various number of judgments, values, and beliefs: collectivism, egalitarian, individualism, and fatalism. The attitudes of people toward risk are filtered by these views and, similarly, their social trust in the institutions that regulate risks. Individuals tend to trust people or institutions more when they share the same worldwide view.

The psychological approach to the study of risk, on the other hand, focuses more on the

cognitive and emotional aspect of risk perception. One of the main ideas behind the psychological approach is the *psychometric paradigm* (Slovic et al. 1985). It is explained as a “theoretical framework that assumes risk is subjectively defined by individuals who may be influenced by a wide array of psychological, social, institutional and cultural factors” (Slovic 2000, p. xxiii). The goal of this idea was to use behavioral measures to quantify and model psychological factors in order to provide a better understanding of how people perceive and respond to risks (e.g., natural, technological, behavioral hazards) and judge the annual fatalities related to specific dangers and the level of acceptability of risks.

Early results showed that the concept of risk “meant different things for different people” (Slovic 2000, p. xxiii) and that laypeople and experts estimate risks differently. The two groups were similar in assessing statistical frequencies of deaths. However, while experts’ risk perception corresponded relatively well to the actual statistics, laypeople’s perception differed significantly (Slovic et al. 1981).

Moreover, the relationship between the acceptability of a risk and its perceived risk and benefit is influenced by various characteristics such as knowledge of the risk, the dread it causes, and how much control one has. A factor analysis of the dichotomies mentioned above (e.g., familiar vs. unfamiliar, chronic vs. catastrophic, controllable vs. uncontrollable) led to a model of risk perception that utilizes a two-factor space (Slovic 2000). One factor represents how new, uncontrollable, unknown, delayed, and involuntary risks are perceived to be. The other factor indicates how fatal, dreadful, and catastrophic the risk is perceived to be (Fischhoff et al. 1978). In this space, for example, bicycling was judged to be relatively controllable, known, and at the same time having a low probability of being associated with death. Nuclear power, on the other hand, was perceived as a hazard that is involuntary, uncontrollable, and potentially fatal.

More recent research associated with this approach aimed to show which characteristics of people’s traits, beliefs, and ideologies influence risk perceptions. Results show that worldwide

visions, gender, ethnicity, and trust have an impact on the perception of risk. Specifically, people with an egalitarian preference for power have a higher perceived risk of several hazards than people preferring a hierarchical social order (Slovic 1999), and white males perceive risks to be smaller than women and nonwhite people do (Finucane et al. 2000b). Lastly, trust in scientific risk assessments and in the government seems to be essential in explaining the relationship between risk communication, risk management, and risk perception (Slovic 1999; Slovic et al. 1991).

Research on Risk

The concept of risk is multifaceted, which is mirrored by the scientific research conducted on the topic. In this section, we will present and discuss different methodologies and findings related to research on risk. It is important to note that this research evolved and changed over time. The first attempts of systematically measuring attitudes related to risk were done about a century ago in the 1920s (Thurstone 1928) and subsequently went through methodological changes. In the initial approaches, risk perception was mainly studied using qualitative methods such as semi-structured interviews with open questions conducted in person or by phone. However, the limitations of these methodologies have turned the research on risk perception toward quantitative measurements (Sjöberg 2000). These approaches still represent the predominant methods of the psychological approach in the study of risk nowadays.

The elements that characterize the quantitative research on risk perception can be listed as the type of risk (i.e., the hazard), the dimensions of risk, and the sample used.

The hazards considered in the research on risk perception are various and diversified. They can be categorized according to the kind of source, which can be personal (i.e., depending on people’s own decisions and actions), societal (e.g., risky choices made by politicians and the society), and environmental (related to natural and uncontrollable events). Additionally, hazards can

be classified according to their type, which can be behavioral, technological (e.g., industrial and high-tech products), and natural (e.g., biological and physical consequences of climate changes). Finally, hazards can also be distinguished depending on who bears the consequences of the risk (e.g., whether hazards impact individuals or groups). Examples of the combination of these elements are the risks of unprotected sex or sky-diving that both represent a personal and behavioral risk that can have dire consequences on the self. Nuclear power and pollutions are, instead, risks considered societal and technological and with consequences that involve many people (Wilson et al. 2019). Some of the most common risks studied are large-scale new technologies (such as nuclear power), natural disasters (e.g., floods), and diseases (e.g., AIDS; Rohrmann and Renn 2000).

Compared to the types of risks, the dimensions of risk perception examined in research are more difficult to be categorized due to a large number of studies on the topic. Firstly, it is important to note that most of the studies testing risk perceptions used primarily surveys and questionnaires. Consequently, the dimensions of the risk analyzed depend on the type of questions used in the various studies. A recent paper proposes an overview of the most used dimensions in the study of risk perception (Wilson et al. 2019). The first dimension deals with general risk perception, which is usually measured by items such as “How risky is X ?” or “Indicate the level of risk that X presents to Y .” A second dimension pertains to affective reactions by measuring the feelings (e.g., worry) related to risk perception (see section ► “Emotion”). Examples of the items used by this approach are “How concerned are you (if at all) about X ?” or “When you think about X for a moment, to what extent do you feel fearful?”. Next to the general risk perception and the affective reactions, two more dimensions proposed by Wilson and colleagues are relative to probability and consequences. Perceptions of probability are measured using words such as chances, likelihood, and probability of realizing a risk. For measuring consequences, people are typically asked about the severity or seriousness of an event. Two

examples of items are “How likely is it that X (e.g., an earthquake) will occur this year where you live?” for the probability and “If I did experience X (e.g., an earthquake), it is likely that it would negatively impact me” for the consequences. The last dimension comprises evaluations of risks and benefits, which imply a trade-off in which participants weigh the risks and the benefit of something and then judge which one is more important. In order to measure this characteristic of risk, scales like the Domain-Specific Risk-Taking (DOSPERT; Blais and Weber 2006) Scale can be used. In the majority of the cases, research investigates more than one dimension in order to address the multidimensionality of risk perception. Moreover, the complete way of testing risk perception includes using separate items for affect, consequence, and probability (Wilson et al. 2019).

The last element that characterizes the research on risk perception is the type of sample used. A large number of studies were conducted with ad hoc samples, especially university students. However, research on risk used also cross-cultural samples to test hypotheses related to cultural differences in risk perception. Other research used samples of experts compared to samples of lay-people, in order to understand how expertise impacts risk assessments. The specific characteristics of each sample are important to answer different research questions and allow different degrees of generalization of the findings.

Risk and the Possible

It should now be transparent that risk is a complex concept that can be approached from several angles and studied using different methodologies (see section ► “Complexity”). However, it is necessary to clarify the key to its complexity. The definition of risk itself contains a concept that links to the notion of *the possible*. For example, risk is also defined as “the possibility of an unwanted event which may or may not occur.” *The possible*, understood in the context of the word risk, refers to the uncertainty associated with two of its elements, namely, the *probability*

and the *consequences*. A risky event has a specific *probability* of happening; for example, an earthquake can have a 5% probability of occurring in a specific region. Moreover, its *consequences* are themselves possible. For example, an earthquake can cause the destruction of houses in 30% of the cases, the death of people in 10% of the cases, and damage to industries in the affected area in 2% of the cases. Thus, the occurrence of an unwanted event has a specific probability, and the consequences themselves are also probabilistic. It is evident, then, that dealing with the assessment of risk means dealing with *the possible* expressed as probabilities or likelihoods.

A substantial body of research has shown that individuals, when they make choices or estimate the possible occurrence of events, are often sub-optimal in dealing with probabilities. The possibility of an event or its consequences is calculations that require an in-depth knowledge of a specific risk domain, which is not always present. Additionally, calculations of probabilities, like many other reasoning strategies, are constrained by cognitive limitations. It is virtually impossible to process all possibilities and their corresponding consequences. For this reason, when dealing with uncertainty, people usually rely on heuristics (see section ► [“Heuristics”](#)), instinctive assumptions, beliefs, and feelings. While this saves cognitive resources, it can also lead to systematic errors with severe consequences. Many studies have analyzed specifically how these shortcuts affect risk perception and estimations of the probabilities related to risks.

One of the most common mistakes in the estimation of the probability of occurrence of a risky event is due to the *availability bias* (Tversky and Kahneman 1973). This bias refers to a judgment and decision-making strategy that can lead to errors because people tend to judge the frequency of an event depending on how easily that specific event comes to their mind. It can lead to overestimating the frequency of events that were personally experienced more often or that are more covered by the media. For example, individuals tend to judge the probability of dying due to a terrorist attack as higher than dying due to climate change (Sunstein 2007).

However, official reports show that, for example, in 2012, the deaths per year due to climate changes were 400,000 (Climate Vulnerability Monitor), compared to the 12,000 deaths due to terroristic attacks (this estimation is reduced to 2000 dead when the deaths in Syria, Iraq, Nigeria, Afghanistan, and Pakistan are not considered; Global Terrorism Index; see section ► [“Crisis of the Future”](#)). Two other cognitive mistakes are the *optimism bias* (Weinstein and Klein 1996) and the *illusion of control* (Langer 1975). It was shown that people tend to be more of an optimist about themselves and believe to be less at risk than other people for several adverse events such as getting divorced, having cancer, or becoming addicted to drugs (Weinstein 1980). Research also demonstrated that people evaluate risks as lower when they are considered under personal control and overevaluate the risk of events which are not controllable personally. For example, individuals generally judge taking a plane as riskier than driving a car, possibly due to an overestimation of control when driving (Langer 1975).

Furthermore, an essential factor in risk perception and misinterpretation of risk is the strong connection with emotional reactions. The *affect heuristic* illustrates that individuals often evaluate risks and benefits based on feelings (Finucane et al. 2000a). Positive feelings usually lead to a lower perceived risk and higher perceived benefit, while negative feelings have the opposite effect. In people’s minds, risks and benefits are often negatively related (i.e., a high risk is perceived to have low benefit and vice versa). However, in real life, risks and benefits can also be positively correlated (i.e., activities with high risk result in high benefits). For example, nuclear power is a technology that involves high risks such as nuclear incidents and radiation poisoning, but it also has high benefits such as being a potent source of energy. Studies show that people tend to perceive high risks related to nuclear power, but as a consequence, they also tend to judge the technology as not very beneficial.

Evidently, it is difficult for people to correctly estimate both the probability of an event and the possibilities related to its consequences. It is

precisely this element of possibility, characterized in the definition of risk that gives it complexity and demonstrates how difficult it is to speak about objective risk. Finally, it shows the importance of considering and understanding the intrinsic subjective nature of risk assessment, risk management, and risk communication.

Summary

Risk is present in people's everyday life, and a proper understanding of the mechanisms underlying risk perception is important on various levels. The way risks are communicated and perceived can influence individual and societal acceptance of potential hazards and guide people's reaction toward the risk (Dickert et al. 2015). Studying risk must take into consideration the complexity of the concept, and several approaches have been developed over time to capture different parts of its diverse facets. Some, such as cultural theory, emphasize the social and cultural influences, while others, as the psychological approach, address the psychological, cognitive, and emotional aspects of risk. The methodological approach to the study of risk has also evolved considerably. One of the many fascinating insights that have been uncovered concerns the relationship between risk and *the possible*. Research has highlighted the difficulty people have in mentally representing the potentiality of the risky event's occurrence and the associated negative consequences, as evident in various cognitive biases. Laypeople as well as professionals that need to assess or manage risks should take these subjective distortions in the perception of objective risks into consideration. Understanding risk perception and its many facets can lead to better and safer decisions at the individual and societal level.

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Satisfaction with Life

► [Positive Psychology](#)

Scientific Modeling

James Nguyen

Department of Philosophy, Stockholm University,
Stockholm, Sweden

Institute of Philosophy, University of London,
London, UK

Centre for Philosophy of Natural and Social
Science, London School of Economics and
Political Science, London, UK

Abstract

This entry explores how scientific models represent what is possible; how they are justified; and their functions. Two different approaches to these issues are discussed: the first concerns models “embedded” in a well-confirmed theory; the second concerns models not so embedded. When the former models represent possibilities, they provide us with information about what is possible according to the theory in which they are embedded. They are justified to the extent that the theory is actually confirmed. Models of the second kind cannot rely on theoretical support in the same way. Yet, scientists regularly extract modal information from such models, and they hold some epistemic merit. What could

underwrite their justification is explored. Finally, various functions played by scientific models that represent possibilities are considered.

Keywords

Models · Target systems · Semantic view of theories · How-possibly explanation · Exploration

Introduction

One important way in which scientists investigate the world is through the construction, investigation, and interpretation of scientific models. Take a simple example: Consider a clockmaker who needs to determine how long the pendulum in a clock should be in order to ensure that each swing of the pendulum takes one second. They might reason as follows. First they realize that if each left-to-right (tick) and each right-to-left (tock) swing is to take one second, then the entire period of the pendulum will take two. They also assume that the pendulum is attached to a frictionless pivot; that the pendulum’s cord is massless and inextensionable; that the bob is a point mass; that the amplitude (i.e., the angle of displacement from the vertical) of the pendulum is relatively low; that the only force acting on the pendulum is gravity; and that the system is governed by the laws of Newtonian mechanics. In doing so the clockmaker has constructed a *model*, in this case the so-called “ideal pendulum,” of their clock.

From the assumptions made, it is relatively straightforward to derive that in the model the period T (in seconds) of the pendulum is given by the formula: $T \approx 2\pi\sqrt{l/g}$, where g is the acceleration due to gravity (in units of length per second squared), l is the length of the pendulum (in the same units of length), and the degree to which the left-hand-side approximates the right-hand-side depends on how low the amplitude of the pendulum is (the lower the amplitude, the better the approximation). By setting $T = 2$ s, and knowing that on earth $g = 9.8$ m/s², it is easy to derive that $l = 0.99$ m (such a pendulum is called a “seconds” or “royal” pendulum, and this result explains why typical grandfather clocks are the size and shape that they are). From the model, the clockmaker can draw conclusions about the actual clock. If they are confident that the friction at the pivot is relatively low, that the cord is light compared to the bob, and so on, then they may conclude that an earthbound pendulum whose length is just short of 1 m will take roughly 2 s to complete a full period, i.e., will take roughly 1 s to tick, and 1 s to tock.

So the ideal pendulum can be used to reason about an actual pendulum. But it does more than this. The model can also be used to reason about nonactual, but in some sense possible, systems too. As a simple example, the model can be used to determine how varying the pendulum’s length will affect its period, even if there is no pendulum on earth of the corresponding length. It can also be used to answer questions like: Were the earth’s gravity different (e.g., if were it more or less massive), how long would the pendulum’s period be? And the model provides an answer, even though assuming that g is anything other than its actual value does not correspond to acceleration due to gravity on the actual surface of the earth (the value of g does vary slightly over the earth’s surface but the discussion here assumes that values of g that are significantly different to 9.8 m/s² are being considered). So the model also provides insight into the possible.

The simple example generalizes: While scientists use models to investigate actual systems, they also seem to use them to reason about possible,

but nonactual, systems. Moreover, for some models, this “modal content” is, in some sense, justified. Unlike “just-so” stories, which provide “cheap” information about possibilities, there are reasons to trust what at least some scientific models tell us about what is possible. Further, given that scientists spend a lot of time investigating these models, presumably they play some useful epistemic functions. The questions then are: How do scientific models represent the possible; under what conditions should we expect this modal information to be justified; and what role(s) do such models play? These questions are the focus of this entry.

A Primer on Model-Based Science

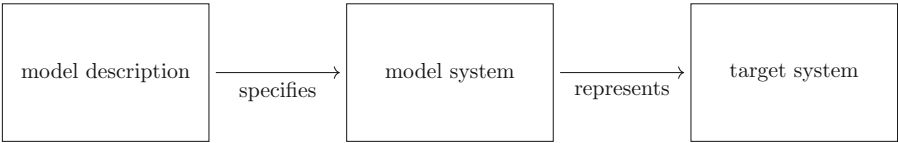
Before addressing these questions, it is useful to provide a conceptual framework for model-based science. Since the ideal pendulum is a paradigmatic example of a scientific model, it is used as an illustrative example. To make things more straightforward the scenario is varied slightly so that the clock is already built with a pendulum length of just short of 1 m, and the clockmaker is using the model to predict (or explain) how long its period will be. The behavior of the clock’s pendulum is the model’s *target system*. This is the part, or aspect, of the world that scientists investigate via their models. Target systems include particular actual systems (like the clock), types of systems (like pendula in general), and as the example of pendula with lengths that do not correspond to any actual pendulum shows, possible but nonactual systems (this way of talking does not engender a commitment to modal realism; one could interpret such models as representing concrete but nonactual systems, but see Frigg and Nguyen 2018, for an alternative way of thinking about models that represent possible targets). As philosophers of science use the term, “target system” covers an incredibly broad class of things, from pendula, to atomic nuclei, population growth, economic markets, and so on (Elliott-Graves 2020, provides a useful discussion of what philosophers of science mean by “target systems”).

Recall that the clockmaker made many assumptions that were false of the actual clock (e.g., that there was no friction at the pivot, that there was no air resistance, and so on). They also applied a theory (Newtonian mechanics) which, while enjoying a considerable amount of empirical justification in certain regimes, is known not to be fully accurate. On the other hand, they employed some true assumptions in their reasoning (e.g., that the length of the pendulum was just short of 1 m). Taking these assumptions together delivers a set of sentences, some of which are true of the actual target, but many of which are false. A question that arises is: Why do scientists trade in false assumptions when reasoning about their target systems? One popular answer in the philosophy of science literature is that, strictly speaking, they do not. According to this view, the set of sentences should be thought of as a *model description* that describes a *model system*, rather than as an attempt to describe the target system directly. This is known as an *indirect* view of scientific models (Godfrey-Smith 2006; Weisberg 2007). The idea being that the assumptions that are written down in scientific journal articles and textbooks specify models, surrogate systems that scientists investigate in their own right, and which, via some comparison with target systems, ultimately afford information about the latter.

What are these surrogate systems? In the context of discussions of more mathematized sciences, it is natural to identify these systems with *structures* (see Thomson-Jones 2011 for a review). In the case of the clockmaker, the structure might consist of a triple of real numbers x , y , and z , with each real number corresponding to a value of T , l , and g , and with the triple acting as a solution to the equation specifying the period of a pendulum. Or more generally in this case, since the equation for the period of the model pendulum is derived from the laws of Newtonian

mechanics, which themselves specify mathematical *trajectories* for the model pendulum, the relevant model may be identified with the trajectory rather than the simple triple. Others prefer to analyze models as *fictions*, often drawing on the literature on the ontology of fictions to analyze them (Godfrey-Smith 2009; Frigg 2010; Frigg and Nguyen 2016; Friend 2020; Thomasson 2020). And yet others take them to be abstract objects, about which little more can be said (Giere 2009). For the purposes of this entry, this debate can be set aside by adopting the minimal claim that models are systems that are specified by model descriptions, and which in turn represent target systems. So the sentences that the clockmaker reasons with specify a model, the ideal pendulum, which, depending on how it is parameterized, in turn represents actual and possible pendula, e.g., clocks, swings, and so on, with different length pendula and different trajectories depending on the force of gravity. This representation relation is often understood in terms of comparing the features of the model with the features of the target it represents (Frigg and Nguyen 2020 provide an extensive overview). The crucial point is that model systems have features and behavior that can be investigated independently (e.g., it makes sense to ask questions like “what is the period of the model pendulum?” without any particular target system in mind), but which ultimately afford us information about their (actual and possible) targets. Figure 1 provides a schematic illustration of the indirect view of model-based science.

This provides conceptual structure to the practice of model-based science. Of particular importance here are the facts that: (i) the focus of discussions of models can be ambiguous between the model systems themselves, or the conclusions drawn from the models, about their target systems; and (ii) that one can construct and investigate a model without specifying its target, in



Scientific Modeling, Fig. 1 Indirect view of model-based science

particular, without specifying whether it is an actual system. As a result, for some models at least, whether they represent actual or possible targets can be a matter of debate, and different ways of thinking about those targets can lead to theorists talking past one another.

Models and Theories

Recall that the clockmaker drew on the laws of Newtonian mechanics in their construction of the model. This is a paradigmatic example of a model that is embedded in a well-confirmed scientific theory. According to a popular view, the “semantic view of theories,” a scientific theory is best thought of as a collection of models, delineated by the laws associated with the theory (van Fraassen 1980; Suppe 1989; Suppes 2002; French 2020). Each model in such a collection satisfies some theoretical laws, although they may differ with respect to their initial and boundary conditions. Thus the laws and initial/boundary conditions are model descriptions in the sense outlined above (and note that the term “laws” is not being used in a theoretically loaded sense here; the laws specify the models, and it is the latter that are important on the semantic view). And so each model represents a target that is possible according to that theory.

Thus, the ideal pendulum model is embedded within a broader collection of models, each of which represents a system that is possible according to Newtonian mechanics. One of these models will be an ideal pendulum with values of $T = 2$ s, $l = 0.99$ m, and $g = 9.8$ m/s², and this represents the clockmaker’s actual clock. Another will be the model with values $T = 1.41$ s, $l = 0.99$ m, and $g = 19.6$ m/s², which represents a possible pendulum whose acceleration due to gravity is twice that on earth, and it tells us that its period would be roughly 0.6 s shorter than a pendulum of the same length on earth. So, such a system is possible according to the theory, even though it does not represent any actual system. Moreover, there is no pendulum model in the theory (meeting the idealization assumptions previously laid out)

with a length just short of 1 m, accelerating due to earth’s actual gravity, that has a period of 5 s. So, such a system is *impossible* according to the theory. In general, the theory will include multiple ideal pendulum models (each corresponding to a different specification of the T , g , and l parameters, or alternatively a different possible trajectory for the bob with different possible initial conditions), as well as many other Newtonian models, including, for example, models representing celestial motion, objects in free fall, projectiles, and so on, all of which are possible according to Newtonian mechanics (see McKinsey et al. 1953 for an illustration of this collection of models). Other scientific theories are associated with different scientific laws, and so correspond to different collections of models.

This is a relatively popular way of thinking about models embedded within scientific theories (although for a different take on the relationship between models and theories, see the classic collection Morgan and Morrison 1999, note that other ways of thinking about the model-theory relationship can also be put to work in understanding how models represent possibilities) The next question concerns the *justification* that is offered for the possibility claims generated in this way. It is not difficult to invent examples of theories and models representing possibilities that lack the justification associated with a well-confirmed theory like Newtonian mechanics. For example, consider the “theory” according to which a pendulum’s period is five times its length, i.e., a theory where $T = 5l$. According to this theory, a pendulum with a 5 s period (whose acceleration due to gravity is the same as one on earth) and whose length is 1 m is possible. In fact, any pendulum of that length will have such a period. This generates a possibility that conflicts with the one generated from Newtonian mechanics; what is possible according to one theory is impossible according to another. But it seems like we are more justified in believing the claim generated from Newtonian mechanics, than we are the other claim. What explains this difference in justification?

Fischer (2016; 2017) argues that the justification for our modal beliefs stems directly from the justification we have in the theories that generate

them. His “theory-based epistemology” (TEM) is the following:

where p is any modal claim, you justifiably believe that p if (a) you justifiably believe a theory that says that p and (b) you believe that p on the basis of this theory (Fischer 2016 p. 238; see also Fischer 2017 p. 22).

where the semantic view is drawn upon to explicate what it means for a theory to “say” a modal claim (Fischer 2017 Sect. 2.1; Fischer 2016 Sect. 4.2). So believing the modal claims generated from the models embedded in the Newtonian theory is justified to the extent that the theory is confirmed, and since there is no reason to believe the cooked-up theory, there is no justification for the beliefs that it generates. (It is worth noting here the conditions under which a theory’s confirmation for a theory carries over to justification about the possibilities represented by its models are not entirely straightforward, since many theories are known to be accurate only in certain regimes. We know that Newtonian mechanics is inaccurate on relativistic scales, and thus presumably lack justification for modal beliefs extracted from Newtonian models that represent systems at those scales. Williams [2019] provides a related discussion as applied to so-called “effective” theories.) The crucial move in TEM is therefore to shift the question: “what justifies our beliefs about possibilities?” to the question “what justifies our belief(s) in scientific theories?”

For this strategy to be successful, some story has to be given about what it takes to confirm a scientific theory. But Fischer’s insight is that this question is already well investigated (he cites Psillos 1999; Lipton 2004; Chakravartty 2007 as examples). So the hope is that the correct account of theory confirmation will provide the conditions under which belief in a theory is justified, and this can then be put to work in justifying the modal beliefs that are extracted from that theory.

But crucially, any reasonable account of theory confirmation will require that confirmed scientific theories are known to accurately represent actual systems. Newtonian mechanics is confirmed to the extent that some of its models accurately represent some actual systems (in certain regimes).

So what gets TEM off the ground is the fact that it applies to theories that include models that represent actual and possible systems; and we *know* that the former are accurate. As such, while TEM provides a neat account of how scientific models embedded within a well-confirmed theory provide us with justified information about possible systems, it cannot account for models that do not have this sort of confirmatory basis. These models are the focus of the next section.

Autonomous Models

Consider another model popular with philosophers of science: the so-called “Schelling model of social segregation” (Schelling 1971, 1978; for a philosophical discussion see Aydinonat 2007). In its simplest formulation, the model can be thought of as a chequerboard with tokens of two different types randomly distributed among some, but not all, squares. For each token, it is “happy” if there are at least n tokens of the same type in its neighborhood (the squares that immediately border the token’s location); and it is “unhappy” otherwise. The model’s dynamics are given by a rule that requires evaluating whether the tokens are happy/unhappy; moving an unhappy token to a free square where it will be happy; and repeating the process until there are no unhappy tokens. The remarkable result of the model is that for almost any initial configuration of the board, and for relatively low values of n (i.e. $n > \frac{1}{3}$), the board will evolve to a segregated state, with contiguous collections of tokens of each type, and few mixed neighborhoods.

The model provides a deep insight into the nature of social segregation; even relatively weak individual preferences for not being in a minority can yield widespread segregation on a macroscale. But what is the nature of this insight?

One option is that the model accurately represents the actual causal factors that give rise to segregation in actual target systems (e.g., residential segregation by race that was historically observed in various US cities): it’s individual preferences for not being in a minority that explain such segregation, not more severely racist

preferences against other races, or racist public policy (e.g., Jim Crow laws). A problem for this approach is that there is evidence that segregation *was*, primarily at least, the result of these latter factors (Rothstein 2017). So while social segregation is driven exclusively by weak individual preferences against being in a minority in the model, it is not obvious that actual residential segregation arises this way. If this is correct, then it is difficult to identify the insight of Schelling's model with the idea that it is an accurate (and relatively complete) representation of actual segregation.

A second option is to argue that the model targets a *particular* causal factor that drives segregation in the actual world, without the goal of representing how this causal factor combines with others to yield segregation (Aydinonat 2007; Mäki 2009; Nguyen 2020). And one way of thinking about this is that the model targets a *possible* system, where weak individual preferences are isolated from the other factors that are known to be in operation. The hope then is that by understanding this possible system (where these preferences act in isolation), one can arrive at partial understanding of the actual system. A third option is to take the model to represent such a possible system, and remain agnostic about whether, or even deny that, the casual factor that is isolated is present in actual segregated systems at all (these options are phrased as if the model represents a concrete but nonactual possible system; as noted above Frigg and Nguyen 2018 provide an alternative way of thinking about these models).

On both of these latter options, one denies that the model, properly understood, should be thought of as representing actual target systems (in the second of the three cases the actual target is indirectly investigated). Rather than inaccurately representing the (complete) primary drivers of residential segregation, the model should instead be interpreted as representing a *possible* mechanism for such segregation. And what the model demonstrates, accurately under this interpretation, is that it is possible for weak individual preferences against being in a minority to give rise to widespread macrosegregation (the second of the three options combines this with the idea that this

possibility is actualized, but in a way that acknowledges that it combines with other factors in the actual world). The model thus provides modal information about the possible causes of segregation (why this is valuable is discussed in the next section).

The next question is: What justifies this modal information (or the beliefs formed on the basis of it)? Again, it would not be difficult to invent a model that represents other possibilities, and yet seems to differ in its epistemic status. Consider, for example, a model containing a single dictatorial individual who chooses where each token resides, and who has a preference for segregated patterns. Again, such a model is not an accurate representation of segregation in the actual world (assuming that the Jim Crow laws are to be analyzed systemically rather than as the result of some particular individual), but there is no problem with the idea that it provides us with information about possible causes of social segregation. While implausible, it is certainly *possible*, in some sense at least, for segregation to arise this way. And yet, there seems to be an important difference in the epistemic status of the two models.

This problem is analogous to the one at the end of section "Models and Theories". But in this instance, it is unclear whether an appeal to a well-confirmed theory in which the justified model is embedded can distinguish between models with respect to their epistemic status. While there is a sense in which the Schelling model could be embedded within a broader collection of models (some of which correspond to different values of n for the happiness thresholds, and others correspond to lattices with different topologies, see Ylikoski and Aydinonat 2014, Sect. 3.1, for a useful discussion), such a "theory" would not be empirically confirmed, at least not in the same way as Newtonian mechanics is empirically confirmed, since the theory would not contain models that we know accurately represent actual systems (one could deny this; one way to account for the epistemic value of the Schelling model is to argue that it does in fact accurately represent certain systems, like segregation by friendship groups at a wedding, and that the

confirmation it gains there carries over to its application to residential segregation).

In general then, how should we think about the justification of models like Schelling's, models that are taken to represent possibilities rather than actual systems? There is no widespread agreement among philosophers of science about how to account for this epistemic merit, but there have been some recent attempts to address the question, in terms of the idea that models that represent possibilities in a justified way are, in some sense, *credible*.

Massimi (2018, 2019) explicates credibility in terms of compatibility with what is known, including consistency with the known physical laws of nature. One way of understanding this is in terms of the view discussed in section "Models and Theories"; credibility means possible according to the theory in which it is embedded. But for reasons already discussed, this will not work for autonomous models, and as Grüne-Yanoff (2009 p. 92) points out, there are many models that represent possibilities that are drawn from sciences that do not trade in "laws of nature," at least in the way that the physical sciences do. On a weaker understanding of "consistency with what is known," credibility could be explicated in terms of *epistemic possibility*, i.e., consistency with knowledge about the actual state of the world, irrespective of whether this involves laws of nature (Grüne-Yanoff and Verreault-Julien 2021). But again, this may be too demanding, some scientifically justified models represent possibilities that *we know* to be nonactual (like the Schelling model, assuming that residential segregation was overwhelming driven by public policy rather than individual preferences). An alternative way of explicating credibility is suggested by Sugden (2000 Sect. 11), who draws on an analogy with realistic fictions to offer two criteria for a model to be credible: It should be internally coherent, and it should cohere with what we know about the actual world, where, crucially, like in the case of realistic novels, "we do not demand that the events of the novel [or model] did happen" (p. 25), or, presumably, are even known to have not happened. One way of understanding this second criterion is to restrict it to certain

limited background knowledge: A model can be credible with respect to some background knowledge, if it is coherent with that knowledge. But one may not demand that the background knowledge include everything that is known about the world; in certain modeling contexts scientists might care about compatibility with some of what we know, even if the possibility represented by their model is ruled nonactual by our complete state of knowledge. This could then provide different forms of credibility, indexed to the kind of background knowledge the model is compatible with (Verreault-Julien 2019a). The question then is how to identify the background knowledge that a credible model should be compatible with. More generally, while "credibility" might help distinguish justified from unjustified modal beliefs extracted from scientific models, this brief discussion highlights that more work needs to be done to explicate what is meant by credibility if it is to perform this role (Sjölin Wirling 2021).

Why Represent Possibilities?

Assuming that there is a justificatory story for the way in which models, of either type, provide modal information, one might further ask: Why do we care? For what purposes do scientists investigate possible system via the construction and investigation of scientific models? A full investigation into this question is beyond the scope of this entry, but it is worth briefly considering some functions of these models.

Scientists care about *explaining* phenomena. Recall that the ideal pendulum model represents both the behavior of the clockmaker's actual pendulum, and how the pendulum would behave, were some of its features different (e.g., if it were a different length, or subject to different acceleration due to gravity). The model thus allowed the clockmaker to predict the actual behavior of the pendulum, as well as answer multiple "what-if-things-had-been-different" questions. According to the counterfactual account of explanation, this is hallmark of a scientific explanation (Woodward 2003). On this account, an explanation of some actual target behavior requires

accurately representing that behavior *and* the features that behavior counterfactually depends upon (these counterfactuals are often understood causally, but see Reutlinger and Saatsi 2018 for a discussion of noncausal counterfactual approaches), in the sense of being able to describe how the behavior would change, were the latter features to change. In the first instance then, models that represent possibilities can be used to investigate these counterfactuals, particularly when they are suitably related to a model that accurately represents the actual target (like the ideal pendulum as applied to the clockmaker's actual clock), and thus they can function to contribute to explanations of actual behavior, via helping scientists explore what-if-things-had-been-different questions.

But, as the example of Schelling's model shows, not all models that represent possibilities do so in a way that is easily combined with an accurate representation of the actual target behavior. Thus, it is difficult to account for the role of such models in terms of providing how-actually explanations (although as Bokulich 2014 notes, whether something counts as a how-actually or how-possibly explanation can depend on the context of investigation). But this does not mean that they are not explanatory at all. Various authors have argued that how-possibly explanations are also an important part of scientific practice (for a useful summary see Verreault-Julien 2019a and the references therein, although as he notes, different authors mean different things by "how-possibly explanation"). Whereas a how-actually explanation accurately represents some target phenomena and the features it depends on, a how-possibly explanation may inaccurately represent such a dependency, but nevertheless offer a possible explanation of the form: It is possible that the target behaves that way because of such and such (e.g., the Schelling model shows it is possible that segregation by race is due to weak individual preferences against being in a minority). It has been suggested that how-possibly explanations are valuable for various different reasons: they perform the heuristic function of telling us where to look for empirical evidence (Resnik 1991); they test possibility/impossibility

claims (Grüne-Yanoff 2009; Fumagalli 2016); they add to a "menu" of explanations (Aydinonat 2007; Ylikoski and Aydinonat 2014); and they contribute to our understanding (Verreault-Julien 2017, 2019a,b) (see Grüne-Yanoff and Verreault-Julien 2021 p. 115 for a useful summary and references of these functions).

Other discussions of the function of such models are not couched in terms of explanation, but seem broadly compatible with the aforementioned ideas. Gelfert (2016) and Massimi (2018, 2019) both focus on "exploratory models," which include models that represent possible systems, and identify various functions that they play in addition to identifying how-possible explanations. These include: models that function as the *starting point* for future inquiry (Gelfert, 2016 pp. 84-85); models that feature in *proof of principle* demonstrations (Gelfert 2016 pp. 85-86); models that assess the *suitability of the target systems* (Gelfert 2016 pp. 93-94); and models that represent various conceptual spaces associated with their target systems, either in the sense of representing *causally possible* mechanisms responsible for target behavior (Massimi 2019 pp. 872-875), or by representing what is *objectively possible*, i.e., by representing entities which are neither known to be actual nor known to be nonactual (Massimi 2018 pp. 548-538; 2019 pp. 875-880). Alternatively, one could think about at least some of these models as functioning to help scientists learn about the formal techniques associated with the theories in which they are embedded, and indeed learn about those theories themselves (Luczak 2017). For example, if Newtonian mechanics includes indeterministic models, then by investigating those models we learn that Newtonian mechanics is compatible with indeterminism.

One thing that is worth noting here is that a number of these functions concern how models that represent possible systems, ultimately at least, contribute toward our knowledge and understanding about actual systems (or alternatively, our actual theories). The representation of possibilities is analyzed as a *means to the end* of learning about actual systems/theories. It remains an open question whether representing possible, but

known to be nonactual, systems *for their own sake* contributes to scientific practice.

As this brief discussion demonstrates, models that represent possibilities potentially perform a number of functions in science. However, these discussions have yet to be analyzed systematically and there is currently no overarching account of how these functions are related to one another (although see Grüne-Yanoff and Verreault-Julien 2021 for a recent step in this direction). Perhaps this is to be expected; the class of models that seem to represent possibilities is vast; and they are found in fields from fundamental physics to economics and social science. There is no obvious reason to expect that such models all function in the same way, and thus the function of individual models in individual disciplines may only be analyzed on a piecemeal basis.

Summary

This entry explores how scientific models represent possible systems; how they do so in a justified manner; and their functions. It provides a conceptual framework for thinking about model-based science, and a discussion of two different classes of models that represent possibilities. A model embedded within a well-confirmed theory is justified to the extent that the theory is justified. Models not so embedded are justified in some other way, most plausibly with respect to the background knowledge with which they cohere. Models that represent possibilities can have a number of functions in science, but these functions have yet to be analyzed in a systematic manner.

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Self-Direction

Soila Lemmetty and Kaija Collin
Department of Education, University of
Jyväskylä, Jyväskylä, Finland

Abstract

Self-direction refers to an individual's responsibility and active role in relation to their own activities. It has largely been considered from the perspective of the individual, with self-direction being seen as a characteristic of the person, a linear process, or a feature influenced by the factors surrounding the individual. It is understood as a positive activity that promotes creativity and learning. However, the possibilities for self-direction have been less explored. The theme of self-direction and its possibilities comprise a topical and important perspective in the research on self-direction.

Keywords

Self-direction · Self-directed learning · Adult education · Possibilities

Introduction and Definition

Self-direction has attracted the attention of researchers and those working in the field of education and working life in recent decades. Self-direction means “making [one's] own decisions” and managing one's own work (Cambridge Dictionary 2020). It can be described as an activity that is free of external control. Self-direction has also been described as the activity of directing oneself or the capability of directing oneself (Merriam-Webster's Dictionary 2020). In the context of education, the empowerment of students to become self-directed learners has been an important starting point. The concept of self-direction

has developed especially in the field of adult education and is strongly linked to learning in the form of “self-directed learning” (SDL) (Knowles 1975). Self-direction or SDL has been seen as a characteristic of the individual (e.g., Guglielmino 1977; see also Merriam 2001) and as a linear process (Knowles 1975; Tough 1971), but also as a strategy guiding whole communities or organizations (Lee and Edmondson 2017). Self-direction has also been linked to intrinsic motivation, the idea that an individual is motivated when they are allowed to carry out their own intentions, develop things that are important to them, and act on their own interests (Deci and Ryan 2008).

Discussions on self-direction can be found in many fields relating to adult life, such as education and work, but also in relation to society in general. Modern Western society and its associated individualism are closely related to the theme of self-direction in their emphasis on the freedom and autonomy of adults in making decisions about their own lives. In such a society, adults are seen as capable of creating and controlling a good life for themselves. At the heart of this idea is a neo-liberal view that individuals are responsible for their own well-being and life (Skeggs 2004). The activities of adults should therefore not be restricted or directed; rather, they should be given freedom and autonomy for self-directed activities. The emphasis on self-direction seems justified in this light, but it has also received much criticism. Problems of inequality are considered to be the most significant in terms of individualism and self-direction (Skeggs 2004). There is also a need to examine critically the extent to which society actually offers individuals opportunities to influence to their own lives.

When looking at self-direction from the perspective of individual situations or processes, such as in working life, it has been shown to include many positive aspects. Self-direction would appear to promote individual well-being, motivation, and learning (Edmondson et al. 2012). In addition to autonomy and freedom, self-direction has been described as an important factor in the emergence of human creativity and thus the emergence of new innovations. Recently, especially in the context of educational research,

self-direction and creativity have been seen as being strongly related to each other (Gijbels et al. 2012; Lemmetty and Collin 2020). In everyday problem-solving situations in particular, the processes of SDL and creative activity seem to be intertwined (Lemmetty and Collin 2020). Self-direction thus provides an opportunity for creativity, but what factors produce opportunities for self-direction?

Self-direction: Concept Definition and Critical Debate

It is easy to think of adults as self-directed actors because adults take responsibility for their lives. An adult seem to be able to choose the direction of their life, education, job, spouse, financial status, and number of family members. We often see that in a learning situation, the adult learner is able to search for the necessary information in a textbook, choose the right channels for their learning, set learning goals, and evaluate their own realization. In adult education, the concept of self-direction has from the outset referred to the natural need for adults to act self-directedly (Lindeman 1926). Such a view is based on the psychological definition of adulthood, according to which the individual is able to take responsibility for their own life (Knowles et al. 2012). In practice, the concept of self-direction has emerged in the field of educational sciences as it has become clear that even adults continue to learn in different areas of life, and mental growth does not end with the cessation of physical growth.

An important framework concept for adult education and learning is andragogy, which distinguishes adult education from child education, or pedagogy. According to Lindeman (1926), the learning of adults and children has to be separated because (1) adults are motivated to learn through experience, needs, and personal interests; (2) adults' orientation to learning is broadly based on aspects of life; (3) experience is the richest resource for adults in learning; (4) adults have a deep need for self-direction; and (5) individual differences between people increase with age. From the beginning, then, adults were seen as

self-directed by nature, as individuals able to direct their own learning (Knowles 1984). Self-direction was understood as a very individual-driven phenomenon and activity.

In recent years, the concept of heutagogy has been developed alongside andragogy. Heutagogy is based on the concept of self-determination, which refers to the strong self-control of learners (Agonács and Matos 2019). Heutagogy has been described as a more radical version of andragogy, specifically from the perspective of learner autonomy and individual orientation. According to the heutagogical view, autonomy in learning requires the learner to have the ability and extensive competence to act in various problem situations or in new and foreign situations. The learner must understand how to learn and evaluate the learning process continuously in different situations. To date, there has been no discussion of the factors outside the individual in voluntary learning; rather, attention has been paid to the skills and competences of individuals. Heutagogy has shown that SDL is only possible for highly experienced experts; studies of SDL have found that even experienced individuals need guidance and support when encountering a completely new situation (Candy 1991).

The concept of self-direction has received a lot of criticism in adult education. This criticism has largely focused on the fact that, in SDL, the individual has been seen as an actor, regardless of context (Merriam 2001). In addition, it has been asked why self-direction is regarded as a feature of adults when some adults are highly dependent on structures and guidance (Merriam 2001). Moreover, it has been found that some adults are motivated by external factors such as rewards, whereas children may be excited to learn and act self-directedly out of sheer curiosity. Because of such criticism, the theory has been developed so that there is no longer a dichotomy between adults and children, but rather a continuum: an adult who knows little or nothing about a subject to be learned is more dependent on external factors, such as teacher guidance. Thus, self-direction came to be regarded as something to be pursued in the future, in relation to the learning situation rather than the learner (Knowles 1984). Thus, the

examination of self-directedness has increasingly begun to take into account the abilities and competences of adults in relation to the subject being learned, as well as the various situation- and environment-specific factors that frame self-direction.

Self-direction as Processes and Projects: Toward Possibility

In adult education research, self-direction has been defined from the perspectives of processes and practices. Several process models describing SDL have been produced (e.g., Knowles 1975; Merriam and Caffarella 1999; Tough 1971). The first models were very linear and did not take into account the effects of context, whereas the models developed later took into account not only the actor but also the context, the nature of learning, and the aspects and contents of the strategy process. What the models have in common, however, is that they describe in one way or another the progress of the SDL process and the factors influencing it. The starting point for process descriptions is that the aim of a self-directed process is to achieve the set goals through different stages (Zimmerman 2008). These stages may include, for example, planning, monitoring, managing, and reflecting on learning (Pintrich 2004). The best known of the first descriptions of SDL processes is Knowles's (1975) description, according to which the learner takes responsibility for identifying their learning needs, defining the learning objectives, acquiring the human and material learning resources, and evaluating the learning outcomes. Self-direction therefore extends to all stages of the learning process, from setting the learning objectives to implementing learning and ultimately assessing what has been learned (Brockett and Hiemstra 1991).

Such SDL processes have been regarded as closely linked to creativity and its empowerment. Process theories describing SDL and creative thinking or acting appear to be very similar in terms of their stages and the role of the actor. In a manner akin to the process of SDL, the process

of creativity is often described as an individual's process that progresses through the formation of an idea or the perception of a problem to find the necessary information, create a new idea, and ultimately evaluate it (Amabile 1996). Lemmetty and Collin (2020) found that the steps of SDL may be included in the steps of the creative process, forming a process intertwined with creativity and SDL. When we consider those studies in which self-direction has been described as a factor promoting creativity and problem solving (e.g., Gijbels et al. 2012), we can regard self-direction as offering significant possibilities for creativity, but the question remains: What enables self-direction?

In terms of the process, a broader starting point for examining self-direction in learning has been the project perspective. From this perspective, learning is regarded as taking place within the environment, the community, and the individual (Clardy 2000; Lemmetty 2020). Thus, from the project perspective, the activities of the individual are taken into account but so also are the opportunities for self-direction produced by the environment. Studies (e.g., Artis and Harris 2007; Clardy 2000; Lemmetty 2020) have distinguished between different learning projects depending on the extent of their self-direction. These studies have been carried out in the context of working life. They found that there are a wide range of SDL projects in working life, with learning being strongly driven by external (organizational) factors in some, while in others the individual's opportunities for decision making are wider (e.g., Artis and Harris 2007; Lemmetty 2020). Thus, self-direction occurs in a wide variety of situations, but its scope and level vary.

In addition, studies have identified the factors that influence the possibility of SDL. Lemmetty's (2020) study found that the goals of different learning situations strongly influence how self-directedness emerges. If we imagine a working-life situation in which an employer wants to initiate extensive austerity measures, it is quite typical for them to inform subordinates about the ways in which the savings are to be achieved. In this case, the employees are not left with the opportunity to consider or reflect on

appropriate means themselves; the information and proposed changes come from the organization. At the other extreme is the working-life situation in which the employee perceives a problem during their job and starts to find out on their own initiative its causes, consequences, and possible solutions, setting goals for learning something new and evaluating the end result. In this case, the individual's self-direction can be seen as broad. The two different working-life situations described above may also be seen as SDL projects that differ greatly according to the opportunities the individual has to make decisions and manage the situation. Thus, it is not always the individual's choice as to whether they are self-directed or willing and able to act; the possibility of self-direction depends on the situation.

However, the goal alone is not the only factor that frames self-direction in a learning situation (Lemmetty 2020). Studies (e.g., Baskett 1993; Bell 2017) have also found that while a situation is ongoing, many factors outside the individual affect the way in which the processes of SDL and the creativity it may involve proceed. In the working-life context, the atmosphere of the workplace, the nature of the supervisor's work, collegiality, and cooperation, as well as the work environment and tools available, have been found to be important (see, e.g., Foucher 1995; Lemmetty 2020), thus also affecting creativity.

Self-direction and External Opportunities

Enabling self-direction is influenced by individual factors, desire and motive requirements, and individual skills and competences (Guglielmino 1977; Merriam 2001; Raemondoc et al. 2017), but also by external factors, such as the environment, autonomy, and control (Bell 2017; Lemmetty 2020; Lemmetty and Collin 2019). Self-direction is both a value-generating factor that promotes creativity and learning, and a requirement and obligation for adults in society and working life. For this reason, it is important to look at the relationship between self-direction and

possibility; that is, the kinds of possibility that self-direction requires to manifest.

One significant and interesting concept in the phenomenon of self-direction has been autonomy. Researchers have disagreed somewhat about the role of autonomy in self-direction. According to Deci and Ryan (2008), external events, such as deadlines, imposed goals, pressure on performance, competition, and evaluations, restrict learners' intrinsic motivation and thus also self-direction, because they displace autonomy. Candy (1991) has argued that as long as a learner's autonomy varies from situation to situation, one should not think that if an individual is self-directed in one situation, they will be in another area. Thus, self-direction does not move as a characteristic with a person from one situation to another; rather, the framework provided for the action affects whether self-direction is possible. The autonomy and freedom described above have been seen in several contexts as a precondition for self-direction, but such a view is very narrow since self-direction is not unequivocally achieved through autonomy alone, and some studies have questioned the importance of autonomy for self-direction, finding that self-direction needs strong support (e.g., Bell 2017; Lemmetty 2020) and that no one can operate fully autonomously all the time in, for example, a work environment. Self-direction is thus a much more complex entity, research into which requires more appreciation of the environment and interactions. As Bouchard (2012) has stated, "In the end, any tangible occurrence of self-directed learning undoubtedly involves the interaction of all three aspects, in that it will entail (1) the application of some actions or procedures, (2) by a person who is not psychologically averse to the experience, (3) in an environment, which at the very least does not preclude the emergence of self-directed learning."

Studies have identified, for example, a climate of trust and appreciation as a factor in enabling self-direction (Baskett 1993), as well as a culture that supports experimentation and allows for errors (Foucher 1995). In any new situation, the process of self-direction also requires support and guidance (Bell 2017). Thus, mentoring is part of the SDL process. Whereas in pedagogy, teaching

has been seen as teacher-centered, in andragogy the teacher has been seen as a facilitator, whose job is to coach the learner to reach better outcomes. Supervisors, managers, and colleagues can be seen as playing a similar role in the context of working life, which is why their role in supporting self-direction is not to tell anyone how to do something but to involve the employee in the work process by discussing the needs of the situation together (Foucher 1995; Knowles et al. 2012).

Self-direction needs commonly stated and understood goals in the community (Kops 1997). However, in the workplace, for example, the different interests and goals of the actors can often create confusing situations. If everyone works in a self-directed way toward their own goals, there will be no certainty that a common goal will be achieved. For this reason, as an individual phenomenon, self-directedness works poorly in communities or societies, where everyone should act according to the particular rules of the game, guidelines, or laws so that bigger goals can be achieved. For this reason, self-direction should be seen as limited: It does not necessarily extend to individual-oriented goal setting or even evaluation of activities, but to individual decision-making moments that emerge during the process (see Lemmetty and Collin 2019). Thus, self-direction should be seen as a framed and situational phenomenon that alternates and interacts with external factors.

Concluding Thoughts

If we recognize that self-directedness stems from everyday problem-solving situations that individuals focus on, for example, in their work, one must consider whence the problem derives: Is it, for example, a customer's need or perhaps a business-related challenge? If the problem arises from something other than the individual's personal need, it is worth noting that its solution – through self-directed action – is always realized in relation to the situation. In such cases, the meaning of autonomy will be blurred, and the importance of other situational frames will increase.

In many fields of life, human activity is guided by some “external” factor, in which case self-directedness is not always an activity aimed at achieving one’s own goals. However, one of the assessments is that in an individualistic society and in working life, where individuals are expected to take on an ever-greater responsibility for their own work, learning, and life, it is often the responsibility of the actors themselves to decide how different goals can be achieved. Thus, self-direction occurs, if not in the setting of goals, then at least in moving toward them. Along the way, however, there are several factors, ranging from interaction, tools, fellow human beings, and affordances, that interact with and affect individual self-direction. Moreover, the relationship between autonomy and support in enabling self-direction in each situation remains partly unconscious (Bell 2017; Lemmetty 2020)

In the future, self-direction should be seen as a broader socio-cultural entity, arising in different situations and contexts. Self-directed research has focused on educational and working-life situations, but the applicability of prevailing theories and perspectives to different age groups (e.g., children, adults, and the elderly) and contexts (such as hobbies and organizational work) is unclear. For this reason, we still need a better understanding of the relationship between self-direction and possibilities.

Cross-References

► American Pragmatism

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Self-Regulation

Aleksandra Zielińska and Maciej Karwowski
Institute of Psychology, University of Wrocław,
Wrocław, Poland

Abstract

This entry discusses the role of self-regulation in fulfilling personal goals. Particularly, it focuses on creative actions representing one

of the most salient forms of engaging with *the possible*. Different conceptual views on self-regulation are discussed, with a particular focus on the holistic approaches to self-regulation, considered best suited for explaining how people guide their creative endeavors. Specific self-regulatory mechanisms considered beneficial when pursuing a creative goal are presented. The significance of conducting intervention programs focused on strengthening self-regulation is emphasized.

Keywords

Self-regulation · Creativity · Creative activity · Creative goal · Uncertainty · Creative self

Opportunities drive people's actions. We formulate our goals, strivings, and pursuits based on the acknowledgment or anticipation that something is indeed possible to achieve. Such an encounter with the possible spurs to exploration, to discover various avenues to follow. Simultaneously, it motivates goal-directedness: an orientation towards a desired state or outcome. This peculiar tension between staying open to the emerging opportunities and canalizing the efforts to the most promising option sometimes referred to as exploration-exploitation tradeoff (Mehlhorn et al. 2015), characterizes a creative action – one of the most prototypical processes of actualizing the possible. Dealing with complexity requires various control and modulatory processes to be engaged as they allow the person to observe, change, and adjust the way of striving for a goal. A broad spectrum of processes vital for a successful goal pursuit has been collectively termed *self-regulation*.

In this entry, we discuss how people engage with the *possible* from the perspective of self-regulation. We highlight the importance of various self-regulatory mechanisms for effective goal realization, especially in pursuing a *creative goal*. We begin by discussing select theoretical views on self-regulation and pointing to its conceptualizations' plurality. Then, we discuss how self-regulation may support creative actions, considered one of the most salient forms of

actualizing the possible. Consequently and finally, we propose why self-regulation should take a more prominent place in debates on encouraging people to seize their creative potential and make them more efficient in realizing the possible.

Varieties of Self-Regulation

In a broad sense, self-regulation refers to the ability and skill to manage own activity adaptively to a context and in a given timeframe. Being often defined in terms of goal-directed behavior (Hofmann et al. 2012; Karoly 1993) or a purposeful action (Bandura 1991), it represents a crucial component of personal strivings, implementing ideas, turning potential into real-life actions and accomplishments, or – in other words – *materializing the possible*. Indeed, effective self-regulation has been found pivotal for a wide range of positive outcomes, such as academic performance (Duckworth and Seligman 2005), health (Hagger et al. 2009), job satisfaction and performance (Wang et al. 2021), or financial well-being (Strömbäck et al. 2017). Deficits in self-regulation are linked to severe risks, including aggression (DeWall et al. 2007), addiction (Zucker et al. 2011), and psychopathology (Laceulle et al. 2019).

Yet self-regulation seems to be a conceptual wild card: it is as popular as ambiguous and differently understood in many disciplines. The overwhelming body of models and theories of self-regulation calls for an integrative framework that would reconcile various meanings attributed to this term. Such attempts have been already made, thus providing a comprehensive roadmap of the existing discourses around the issue (Bridgett et al. 2015; Inzlicht et al. 2021; Karoly 1993; Lord et al. 2010; Vancouver 2008). Still, the empirical research does not always inform each other and leaves a noncoherent picture of the self-regulation construct (Burman et al. 2015; Eisenberg et al. 2019; Nigg 2017).

The apparent yet most likely dominant reason for the ambiguous meaning of self-regulation is its multiple provenances. While many disciplines have indeed (re)constructed the self-regulation

term, the contemporary understanding seems to consist of two parts, one with origins in cognitive and neuropsychological literature and the other built upon personality research heritage (Malanchini et al. 2019). From the cognitive view, self-regulation largely relies on one's executive functioning: the employment of mental operations, including inhibition, updating, switching, and working memory, as well as their combinations engaged in planning, reasoning, and problem-solving (Diamond 2013; Miyake et al. 2000; Miyake and Friedman 2012). The personality-oriented perspective points to various constructs considered crucial for effective self-regulation. These include self-control, grit, impulsivity, and other – often temperamentally rooted and relatively stable – traits and dispositions.

Importantly, in both those traditions, the dual nature of self-regulation is recognized. Not only deliberate, top-down, and effortful processes constitute one's capacity to self-regulate, but also reactive, bottom-up, and automatic components. Although these two systems have been traditionally described as independent and competing, thus often generating a conflict between temptations and long-term strivings (e.g., Hofmann et al. 2009; Kahneman 2011), they both perform regulatory functions (see, e.g., Evans and Stanovich 2013; Nigg 2017). For instance, in the face of novelty and uncertainty – inevitable when dealing with the possible – more reactive and automatic responses might initiate the self-regulation process. Such a spontaneous reaction can determine whether a person approaches the novel situation or withdraws from the encountered challenge. In other words, an initial response to the emerging opportunity can be marked by overcontrol (behavioral inhibition) or undercontrol (impulsivity), thus focusing attention on or swaying from engagement with the possible. Then, more strategic and deliberate processes – an effortful control of behavior, thought, and affect – may come into play.

Importantly, this is just one example of how self-regulation can unfold over time. The interplay of different self-regulatory mechanisms is much more dynamic and characterized by mutual exchanges. Studies that compared

performance-based (close to the cognitive tradition) and self-report (stemming from personality research) measures of self-regulation demonstrated weak to moderate or even more often insignificant links between these ratings (e.g., Nęcka et al. 2018; Toplak et al. 2013). It suggests conceptual and – most of all – functional distinctiveness of executive functions and personality-oriented aspects of self-regulation. However, despite being separate, both components affect each other and can be mutually influential throughout development (Blair 2016; Blair and Ursache 2011; Howard et al. 2021). It confirms the complexity of self-regulatory processes, with cognitive, metacognitive, affective, and motivational components orchestrated when governing the activity.

From this perspective, it seems crucial not to reduce self-regulation to cognitive abilities or to stable traits rooted in personality or temperament. Instead, a more holistic approach that underlines both dispositional and skill-related aspects of self-regulation and considers the managed activity's dynamic and transactional context seems more fruitful (see, e.g., Frazier et al. 2021; Karoly 1993). With such a broad view, self-regulation of various actions could be described, including short- and long-term, and those with well-defined or rather unspecified goals. This approach seems especially well-aligned for explaining how people realize their creative pursuits: explore the possible and fulfill their creative potential.

Self-Regulation in Actualizing the (Creative) Possibilities

Self-regulation and creative action are often initiated by the failure of well-known, habitual patterns of acting and thinking. This is when the inevitable feeling of uncertainty emerges, which triggers the search for new possibilities (Beghetto 2020, 2021). However, it is also when a goal-oriented approach is being activated, and self-regulatory processes are mobilized (Karoly 1993).

Indeed, when striving for a creative goal, the experience of uncertainty is natural and present from the very beginning to the very end of the

creative process. Usually, people start with a vague idea of what they want to achieve; they formulate a problem, consider possible ways of acting, and anticipate the results. However, through the entire creative process, both goals and the means to attain them are revised, reformulated, and adjusted (Botella 2013; Glăveanu et al. 2013) as new ideas and opportunities emerge (Sawyer 2018). Even when a creative outcome is achieved, it still may be inconclusive (Corazza 2016) – perceived as unfinished, requiring reworking, and open to new interpretations.

The creative process is demanding, and thereby many people do not decide to engage fully in creative activities. There could be multiple reasons behind such a decision, with various motivational factors being emphasized as critical drivers of the decision to act creatively or not. Indeed, regardless of the actual creative abilities and dispositions, one may have little confidence in them or do not perceive creative challenges as worth the effort. When this is the case, one's creative agency – willingness to act creatively and confidence to do so – is insufficient (Karwowski and Beghetto 2019). Similarly, holding attitudes that are unfavorable for creativity, like risk aversion or expecting a negative social response to one's creative attempts, may hold back from engaging in creative pursuits (Beghetto et al. 2021; Ivcevic and Hoffmann 2021).

Therefore, to explore the possible in the actual creative action, a healthy and adequate creative self – built on adaptive creative self-beliefs and positive orientations towards creativity – is needed. Still, the regulatory aspect of the creative self has not been fully explored to date. In what follows, we briefly discuss the nature of creative self-regulation and the mechanisms that most likely constitute one's capacity to initiate, guide, and persevere in creative efforts.

Hot and Cold in Creative Self-Regulation

Creative individuals, particularly eminent figures in science or art, are often perceived as absent-minded, impulsive, and chaotic. While

this stereotype is not completely invalid, it is grossly oversimplified, like all stereotypes. Creative work, particularly when associated with fulfilling long-term goals, be it completing a novel, creating a painting, or composing a symphony, is, after all – a work. It is anything but easy – such work does not happen incidentally; successes do not come without effort and dedication.

Consequently, the analysis of creative self-regulation requires a nuanced perspective that considers different forms and levels of creativity. When creative ideation (e.g., generating ideas for a new game with friends) or solving everyday problems (e.g., figuring out how to create the most original presentation for tomorrow's science class) are considered, self-regulation is likely less critical – or simply centered around a narrow range of control processes – than when long-term actions are fulfilled. In the divergent thinking task or during the brainstorming session, individuals focus on generating many ideas; they inhibit less original ones and use different strategies to create new responses that were not proposed before. Self-regulatory mechanisms engaged here are primarily those of cognitive and metacognitive character. They might include considering an object's properties or decomposing it to reassemble its components (Gilhooly et al. 2007) or introducing changes based on constant monitoring and self-evaluation (Fayena-Tawil et al. 2011; Jankowska et al. 2018).

However, when we consider creativity as the more complex activity that leads to observable outputs, the role of self-regulatory behaviors and strategies grows. As Ivcevic and Nusbaum (2017) explain, long-term activities require revising the goals and subproducts, using adaptive strategies to overcome barriers, and dealing with obstacles. This is precisely why the role of personality-like characteristics increases. These factors allow some people (yet at the same time make it difficult for others) to flexibly adapt to the situation, change their perspectives and plans, manage affective difficulties they face, and the like. Notably, although self-regulatory behaviors are not always used consciously by people who create, successful creators are surprisingly well-disciplined, organized, and indeed – strategic –

when it comes to their work (see Ivcevic and Nusbaum 2017).

At the same time, however, what makes creativity different from all other spheres of human activities is its uncertainty, openness, and multidirectedness. It is relatively straightforward (even if not always easy in practice) to plan, monitor, and evaluate our activity when the goal is well-defined – like losing weight or quitting smoking. But when individuals manage their creativity, the thing becomes tricky. Plans and initial ideas change and evolve, subproducts (e.g., chapters or sketches) vanish, new opportunities suddenly come into play. As the creative process is by no means linear, neither is creative self-regulation. Different phases overlap or even change their order: planning does not always precede generating – sometimes initial sketches and improvised actions lead to the subsequent plans on developing these ideas (e.g., Glăveanu et al. 2013). Consequently, current theories of creative self-regulation accentuate its dynamic character, with cognitive, metacognitive, affective, and motivational components engaged. For the sake of more conceptual analysis, the creative process is sometimes divided into the phases of preparation, generation, exploration, and evaluation (e.g., Botella et al. 2018), so is self-regulation (Rubenstein et al. 2018). Still, the sequential character of creative self-regulation is rather doubtful.

A recent analysis of adolescents' self-regulation during creative projects (Zielińska, Lebuda et al. 2022), as well as an overview of more professionalized creative activity of adults across a range of domains (Zielińska, Forthmann et al. 2022), demonstrated a sound theoretical framework and promising measurement of creative self-regulation inspired by the perspective of self-regulated learning. These analyses identified seven specific sets of behaviors relevant for the preparation, generation/exploration, and evaluation phases in creativity.

When it comes to the preparation phase (forethought phase to use self-regulated learning words), it was found that obstacles expectations, and uncertainty acceptance form adaptive ways of dealing with creative problems at the initial stage. More creative individuals were found to be more

aware of different problems they will meet during their work and obstacles to be managed, yet this awareness does not make them less effective; quite the opposite. In a variety of contexts, it was indeed shown that when people supplement their desired futures – the images of what they want to become or achieve – with more pragmatic views on potential obstacles to overcome, they are more likely to succeed and attain the set goal (Oettingen et al. 2000).

Three factors emerged as particularly important when the activity starts (performance phase). The first, described as the adjusting approach, is associated with flexible ways of dealing with the task to obtain the best results. The second, managing and reframing ambiguous goals – so a tendency to accept and deal with ambiguity – focuses on making the process steps more specific and well-defined with time. The third factor pertains to emotion regulation, mainly when obstacles are more severe than expected.

Self-regulation does not end when the activity is done. The proposed product and steps taken are subjects to self-reflection, often inspiring future initiatives and actions. Two factors identified as relevant for creative self-regulation in this phase are the improving approach, the tendency to improve and do something better next time, and the readiness for sharing – an orientation towards presenting the outcome to others.

Self-regulation makes complex tasks, including creative tasks, approachable. Although there is no guarantee that the individual conducting such actions will eventually succeed, applying self-regulatory behaviors in phases of planning, performing, and evaluating the activity, makes success more likely. Thus, self-regulation is among the elements that translate *what is imagined* to *what is possible*. However, people differ greatly in the effectiveness of their self-regulation. Therefore, what seems particularly important, are different ways of making it more efficient. Such interventional solutions would be particularly welcome in the case of creativity. Previous research confirmed that several training-like interventions effectively develop divergent thinking (Scott et al. 2004) or creative imagery (Karwowski et al. [in press](#)). However, a new and fascinating area of endeavor is to develop similar

interventions that could support people's self-regulation, including creative self-regulation. So far, promising results have been obtained in research on so-called “wise interventions”: focused on well-targeted motivational prompts that strengthen people's self-perception, thereby increasing their performance and well-being (Walton and Crum 2021). A recent study (Zielińska et al. [in press](#)) has also found that this approach might be efficient in building creative confidence and indirectly supporting everyday creativity. Future interventions should take a closer look into the possibilities of strengthening creative self-regulation.

Conclusion

To fully understand how something is possible or not, scholars need to better understand the nuances and conditions of people's activity. As we emphasized in this entry, complex tasks and projects to be conducted effectively require cognitive skills and abilities and the decision to engage individuals' energy into actions and manage these actions well. This is when self-regulation comes into play, focusing on planning behaviors, monitoring progress and potential barriers, and evaluating the effects obtained.

Given that creativity could be considered a perfect case of exploring the possibilities of our potential, the particular focus in this entry was on creative self-regulation. The novelty and uncertainty experienced when pursuing a creative goal make attaining it highly dependent on the solid creative self: personal orientations towards creativity and adaptive modulation of one's engagement. This constitutes the self as both a *source* and a *target* of regulatory processes. Thus, creative potential to be brought into fruition has to be powered not only by a desire to succeed but also by agile governance of the undertaken goal-directed actions.

Some promising attempts to conceptualize creative self-regulation's complex and dynamic nature have been made. Notably, different control mechanisms were identified as particularly vital for guiding creative actions in the preparation phase, during the actual performance, and when reflecting on what has been attained. The set of

factors found beneficial for realizing the creative projects might inspire researchers and practitioners to design tailored programs and interventions that would support people's self-regulation across all stages of the creative process, thus making creative goals *possible* to reach.

Cross-References

- Creative Development
- Creative Mindsets
- Creative Self-Efficacy
- Creativity
- Curiosity
- Insight
- Uncertainty

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Self-Transcendence

► Spirituality

Self-Transformation

► Spirituality

Semiotics

Robert E. Innis
Department of Philosophy, University of
Massachusetts Lowell, Lowell, MA, USA

Abstract

What is a sign? Why are there signs? Where do signs come from? How many types and kinds of signs are there? What is the basis for their

classification? What are their respective powers? How do they stand to one another? What are the various uses to which they can be put? Semiotics, the general theory of signs, is the discipline that tries to answer these questions in a systematic and comprehensive way. Semiotics deals with meanings and messages in all their forms and all their contexts. Semiotics takes its name from the Greek word *semeion*, a sign, mark, or token by means of which a thing is known or differentiated from another. Semiotics studies *semiosis*, processes of meaning-making or signification through signs and sign systems of every kind. We are caught up in these systems, and by means of them we interpret our lives and the “worlds” in which we live or desire to live. Semiotics is a “big tent” discipline. Its practitioners and proponents come from related yet different backgrounds and disciplines and have developed different analytical procedures, conceptual schemes, and theoretical focal points. Some have extended the scope of semiotics to the whole range of cultural phenomena that must be interpreted, or reinterpreted, in semiotic terms. Other have developed the area of biosemiotics to inquire into how far down in the realm of living forms one can see semiosis occurring. This entry will show how it is possible to frame these core questions and issues with the help of analytical tools developed by three fundamental figures in semiotics: Ernst Cassirer, C.S. Peirce, and Karl Bühler.

Keywords

Signs · Semiosis · Language · Expression · Representation · Symbolization · Abstraction

Nature and Scope of Semiotics

Semiotics takes its name from the Greek word *semeion*, a sign, mark, or token by means of which a thing is known or differentiated from another. Semiotics studies *semiosis*, processes of meaning-making or signification through signs and sign systems of every kind (see Nöth 1990; Sebeok 2001). We are caught up in these systems,

and by means of them we interpret our lives and the “worlds” in which we live or desire to live.

In Ernst Cassirer’s *An Essay on Man: An Introduction to a Philosophy of Culture*, we find the following passage:

Physical reality seems to recede in proportion as man’s symbolic activity advances. Instead of dealing with the things themselves man is in a sense constantly conversing with himself. He has so enveloped himself in linguistic forms, in artistic images, in mythical symbols or religious rites that he cannot see or know anything except by the interposition of this artificial medium. (1944, p. 25)

It is within and by means of this diverse artificial medium and symbolic activity that human beings “weave the symbolic net, the tangled web of human experience.” This web is both the product and the generative matrix of the various forms of human possibility and creativity. It makes up the “semiosphere” (Lotman 1990) or “symbol world” (Langer 1967, 1982).

Umberto Eco once wrote that the subject matter of semiotics is “co-extensive with the whole range of cultural phenomena, however pretentious that approach may at first seem” (1976, p. 6). Moreover, he claimed, “signification encompasses the whole of cultural life, even at the lower threshold of semiotics” (1976, p. 46). This lower threshold “pushes meaning down” to the level of the “genesis of perceptual signification” (1976, p. 167), the analysis of which entails a “semiotical definition of the *percepta*” (1976, p. 164) and also, perhaps, of the *manipulanda*, that is, those things that are subject to our “handling” (Tallis 2003). Such considerations make semiotics a “big tent” discipline. Its practitioners and proponents come from related yet different backgrounds and disciplines and have developed different analytical procedures, conceptual schemes, and theoretical focal points (Chandler 2017, Chap. 1; Nöth 1990; Innis 1985).

Roman Jakobson, one of the most important language theorists of the twentieth century, argued that while language is “a purely semiotic system,” semiotics as a general theory must also be able to analytically illuminate such applied semiotic structures as architecture, dress, or the vast culinary forms of culture. As he put it, “any edifice is

simultaneously some sort of refuge and a certain kind of message. Similarly, any garment responds to definitely utilitarian requirements and at the same time exhibits its various semiotic properties.” For Jakobson, “semiotics deals with those general principles which underlie the structure of all signs whatever” (Jakobson 1968, p. 698; cited in Chandler 2017, location 439). Ferdinand Saussure, whose *Course in General Linguistics* became a conceptual resource for an important strand in semiotic or “semiological” research, wrote that one can conceive of a science “that studies the role of signs as part of social life” (1986, p. 15). He proposed calling it *semiology* and assigned it to social psychology. But its task was first and foremost to be the investigation of “the nature of signs and the laws governing them” (p. 15).

In Saussure’s conception linguistics is itself only one part of this general science, although it also became at the hands of others at times a model for it by reason of the centrality of language in human life. Roland Barthes famously wrote, with Saussurian linguistics in the background, that images are “penetrated through and through by the system of meaning, in exactly the same way as man is articulated to the very depths of his being in distinct languages,” since “the psyche itself is articulated like a language” (Barthes 1977, p. 47), a position taken up and developed by the French psychoanalyst Jacques Lacan (2002).

John Dewey in his *Experience and Nature* rightly called language the “the tool of tools, [...] the cherishing mother of all significance” (1925, p. 146), but not in the sense that the signifying powers of the language animal’s offspring – art, myth, religion, ritual, mathematics, political constitutions – are merely derivative and never go beyond the semiotic power and reach of language in the normal discursive or pragmatic sense. This they clearly do, but they grow out of the determining matrix and principles of language. In his *Logic: The Theory of Inquiry* (1938), Dewey went on to claim, anticipating Jakobson, that language can or should be taken in its widest sense to include not just written or oral speech or gestures but “rites, ceremonies, monuments and the

products of industrial and fine arts” such as temples, statues, and looms (pp. 51–52).

C. S. Peirce, one of the founders of American pragmatism and developer of a comprehensive general theory of signs, made a more fundamental claim: “whenever we think we have present to consciousness some feeling, image, conception, or other representation, which serves as a sign” (1931–1958, CP 5.283; cited hereafter as volume and paragraph) and as a result “all thought . . . must necessarily be in signs” (CP 5.251). Thinking about ourselves has to be thinking *in* and *about* signs, and language is the ultimate medium in which this is carried out. Peirce wrote:

For thinking is a kind of conduct, and is itself controllable, as everybody knows. Now the intellectual control of thinking takes place by thinking about thought. All thinking is by signs; and the brutes use signs. But perhaps they rarely think of them as signs. To do so is manifestly a second step in the use of language. (CP 5.534)

This second reflective step, however, reveals sign systems that have a different logical form from language even if they would not be possible without it: artistic images, music and dance, mythical symbols, religious and non-religious rituals, and so forth (see Langer 1942, 1953; Innis 1985, 2009).

Signs in all their forms function as mediating devices linking an organism and the world, both natural and social, with which it is interacting. By means of these signs of different types and modes, we grasp, are grasped by, and express the affective, practical, and conceptual significances in the spiraling circuits of engagement with our natural and cultural environments. Thinking in signs makes possible, but does not guarantee, our becoming explicitly aware of the determining role signs and sign systems play in the conduct of our lives. We need to know not only what makes them possible, but *what they make possible*.

Cassirer affirmed “*as the fundamental feature of all human existence*, the fact that man is not lost within the welter of his external impressions, that he learns to control this sea of impressions by giving it *ordered form* . . . a unique productivity . . . the *objectification*, the *apperception*, of the

ground of all theoretical, aesthetic, and ethical creation of form” (1942, pp. 22–23).

Semiotics has as one of its central tasks, overlapping with philosophy, to determine the nature of the “ground” out of which the creation of this artificial medium, the symbolic net, the realm of ordered form, arises and is supported. In line with the theme of this volume, this article will not be a survey of semiotics but the *exemplification* by a kind of “method of rotation” of how some fundamental semiotic analytical tools help, in different but complementary ways, to frame the “ground” of the possible.

Functional Circles and Form Worlds of Meaning

Cassirer saw in theoretical biologist Johannes von Uexküll’s (1934, 1940/2010) schema of a “functional circle” or “functional cycle” (*Funktionskreis*) a powerful model for characterizing the life activity of each type of organism, including the human organism, in its *Umwelt* or species-specific environment. Uexküll contended that each organism, by reason of its structure, functioned within a “circle” or “cycle” of recurring activities. Such a circle is structured by a *receptor system* within which the organism “marks” or “apprehends” cues or “distinctive features” in its perceptual field and an *effector system* within which it responds into a motor field or space of action of some sort. Those fields thereafter carry the patterned results of this effective responding, and the organism then responds perceptually and effectively to them in a recurring cycle of activities. These worlds, Uexküll showed, are the species-specific perceptual and pragmatic *meaning-spaces* of organisms, a central concern of what is now biosemiotics (see Hoffmeyer 1993, 2009; Favareau et al. 2012; Kull 2015).

The human *Umwelt*, however, Cassirer points out, is not a functional circle of recurrent limited patterns but the building of a dynamically open *symbolic system* made up of different types of signs and sign-configurations. This system does not just quantitatively enlarge our perceptual-motoric functional circles but qualitatively

changes them. This symbolic system, nevertheless, has its roots in the development of enlarged capacities of the symbolic animal's body-based sensory and effector systems (Deacon 1997; Tallis 2003, 2010). It is a *metabasis eis allo genos*, an emergent system not reducible to, but nevertheless incorporating, its biological antecedents. The central lesson for semiotics of Uexküll's concept of a functional cycle, according to Cassirer, is that "reality is not a unique and homogeneous thing; it is immensely diversified, having as many schemes and patterns as there are organisms" (1944, p. 23). These schemes and patterns determine what is both physically and semiotically possible for organisms.

Cassirer's model of the symbolic net (1924, 1925, 1929) is a permanent resource and model for semiotic analysis of the possible that joins universality with specificity (Lofts 2000). It is based on a triad of "form worlds" arising out of progressively more *objectifying* activities rooted in what Cassirer called the "original attitudes and formative modes of consciousness" (1929, p. 57). These modes, making up the semiotic triad of expression (*Ausdruck*), representation (*Darstellung*), and pure or formal signification (*Bedeutung*), underlie and are embodied in the human systems of signs that make up the symbolic net of cultural forms. These modes are not sequential. Cassirer's triad of modes is a heuristic structure for analyzing how experience with its form worlds is structured from a semiotic point of view.

The systems of signs in which we dwell and from which, as Peirce argued, we cannot escape make up our "exosomatic body," a semiotic body. Elmar Holenstein, writing about structuralist semiotics, remarked that it showed "the root-like attachment of the world's subjective constitution to sign systems" (1976, p. 5). Michael Polanyi showed how the acritical assimilation of and indwelling in sign systems is "fraught with the roots it embodies" (1966, p. x). The semiotic body is clearly dependent in certain ways on the natural body and its powers that are proper to the human type of being. But Cassirer's analysis shows it is precisely the emergent self-creating reality of our articulated sign systems that

transcends or breaks the relatively closed functional circles of non-human organisms and builds another circle, the ever widening gyre of human semiosis, rooted in the triad of expression, representation, and pure signification as the informing modes of consciousness. They make up the dimensions or open fields of possible meanings that can never be separated from their roots in the conditions of our natural and semiotic bodies.

Cassirer characterizes the "primary form of consciousness" (1929, p. 107) as the domain of *expression*, the semiotic mode in which the "original face" of objects (1929, p. 70) is encountered, a "vast diversity of original physiognomic characters" (1929, p. 68) with "physiognomic individuality" (1929, p. 69). The psychology and phenomenology of perception has explored this dimension of experience in classic works as have the works of the cultural anthropologists and students of pre-history. This original face is not of "things" but of "definite modes of appearing" (1929, p. 73), experienced qualities to which are applied such words as luring, repellent, minatory, mysterious, smiling, eerie, and so forth. The affective stratum of human experience is pregnant with significances that elude discourse but not articulation. The history of culture shows humans to be extraordinarily sensitive to these significances, even in the pre-historical period of humanity's development. Humans have *objectified* these significances, from time immemorial, in materials and actions of every sort: visual forms, ritual acts, mythic narratives, music, word magic, and so forth (1925). This is Cassirer's domain of *expressive signs*, both natural and cultural, reaching high levels of sophistication in both technique and content in the arts.

Cassirer characterizes the formative mode of *representation* as the movement to "richer and higher forms of experience" (1929, p. 107), the achieving of an "entirely new level of consciousness" (1929, p. 111). The primary form of this mode is human language, as opposed to the calls, signals, and proto-symbols permeating the pre-human world. Language constitutes the core power engine of the human symbolic system. What makes it possible and what does it make possible? Cassirer attributes this achievement to

our being able to abstract from a “formed total intuition” or Gestalt of some sort a “factor” that is “taken as representative of the whole” (1929, p. 114). The antecedent expressive whole presented as “the immediate face of things” (1929, p. 110) becomes a “thing,” indeed a *type* of thing, with its attributes, although it does not lose its expressive quality. Attributes become the “representatives” of the thing, allowing it to be a member of a class. The attributes *stand for* and *make present* the thing in and to consciousness. This standing for relation is the fundamental feature of signs. Language stabilizes and extends this interpretive power to grasp the “as-structures” of things.

Cassirer’s analysis shows us, however, that *presentation*, proper to expressive consciousness, and *re-presentation*, through and in the abstraction of perceptually selective and variably motivated defining features, are indissolubly joined together. The development of the systems of presentational symbols in the arts out of their historical groundings in ritual and myth is an achievement rooted in language. Humans, as those animals that “divide their voices” in speech, are also those that divide the material perceptual world itself. Out of such materials, we construct “symbolic forms” that embody unending ranges of felt significances. Just as human languages carry or embody “natural world views,” so it is the break in experiential immediacy effected by language that enables the creation and recreation of experienced worlds in the arts. According to Cassirer the modes of both expression and representation are bound to the perceived world which can be “visualized” or grasped in images or image-schemas of some sort. But, as sign systems, they are also marked by an unending semiotic productivity by reason of their inextricable connection to the open temporal flux of experience itself that is taken up and woven into the symbolic net.

Cassirer distinguishes a third formative mode that he calls “*pure signification*” (*Bedeutung*). This mode goes beyond the “natural world concept” of the two “prior” modes which deal, as he put it, with “configurations” (1929, p. 283) of greater or lesser stability and fixedness. These are “definite totalities of meaning” (1929,

p. 286), tied as they are to affective apprehension and perceptual articulation through language and affect-laden image-based sign systems. Pure or formal signification gives rise to a “new kind of object” (1929, p. 320) which is not the result of perception-based conceptual syntheses. Cassirer importantly notes that this move to the “higher potency of the discursive” (1929, p. 288) “does not create a break in the totality of knowledge—it continues a basic trend as an emergent property of human organisms, which already proved to be at work in the first stages of sensory, perceptual knowledge” (1929, p. 307).

This basic trend is the power that sign systems have of differential articulation or segmentation of the experiential continuum, until one arrives at differentiation and constructive creation of the semiotic medium itself as it moves toward systematic formalization or axiomatization. The objects of “pure signs of signification” (1929, p. 285, see also 1910/1923) are no longer classes but relational patterns and laws. This is the world of mathematical physics and of the formal sciences, but not that of the observational sciences, although even they are subject to differing degrees of formalization and systematization. Such a shift toward pure signification is more evidence of the fundamental semiotic principle that “no being is tangible or accessible except through meaning” (1929, p. 299). The strangeness of the purest forms of this world view comes from the move toward ever more universal symbols and toward a view of the world “from the standpoint of no one” (1929, p. 478). Cassirer admits, however, that it is impossible to step over one’s shadow. This is a problem that has vexed scientists and philosophers for more than a century by reason of the paradoxes arising out of the tension between observation and theory in physics and crises in the foundations of mathematics and logic.

Cassirer’s semiotic framework also allows us to see the links, indeed even parallels, between the distinctively semiotic form worlds of culture and the form worlds arising from the exploitation and transformation of materials, the world of “technics” or technology and the differentiation of the spatial frames of life into the mythical, aesthetic, theoretical, corresponding to the triad of formative

modes of consciousness (Cassirer 1930, 1931; Innis 2002, Chap. 6). Cassirer shows that the transformation of materials, and our own self-transformation by reason of our engagement with materials, follows the dynamic trajectories of technics from the early participatory, mimetic, or even magical phase, through an intermediate analogical representational phase based on “organ-projection” modelled on the body, to the abstract formal technologies, rooted in the dimension of “pure signification,” exemplified in the information revolution (see Innis 2002, Chap. 6). Our semiotic bonds to the world become materially effective through their enabling, for weal or woe, of materio-technical practices in which we are embodied (Bardt 2019; Innis 2002, Chap. 5). The effects of semiosis spread over the human world as a whole, weaving it together but also tearing it apart and reassembling it in new ways by critically projecting fields of the possible: possible fields of new self-interpretation, possible fields of new semiotic effects, and new worlds of artifacts that confront us not just with their functional fields but with their at times ominous messages, as the splitting of the atom has shown.

Signs and the Free Water of Consciousness

Another indispensable way of determining the general principles of semiotics that frame the grounds of the possible has been developed by Peirce, whose writings have spawned cascades of commentary and extension (Jappy 2020). Peirce offered a striking image of consciousness, quite different at first glance from Cassirer’s rather laconic, though dynamic, notion of formative modes. He writes:

I think of consciousness as a bottomless lake, whose waters seem transparent, yet into which we can clearly see but a little way. But in this water there are countless objects at different depths; and certain influences will give certain kinds of those objects an upward impulse which may be intense enough and continue long enough to bring them into the upper visible layer. After the impulse ceases they commence to sink downwards. (CP 7.547)

Following a long philosophical tradition stretching back to antiquity, Peirce distinguished three categories of consciousness:

First, feeling, the consciousness that can be included with an instant of time, passive consciousness of quality, without recognition or analysis; second, consciousness of an interruption into the field of consciousness, sense of resistance, of an external fact, of another something; third, synthetic consciousness, binding time together, sense of learning, thought. (CP 1.377)

These modes, called in other contexts “*primisense*,” “*altersense*,” and “*medisense*,” are not to be thought of as sequential any more than Cassirer’s were meant to be, although there is an intrinsic ordering in their pattern. Peirce referred to them as “constant ingredients of our knowledge” due to “congenital tendencies of the mind” (CP 1.374). It is within them, as ultimate elements of consciousness or “faculties of the soul,” that Peirce locates signification and the creative functioning or play of signs in human life. They are clearly the potencies informing those “certain influences” that bring “certain kinds” of objects forward into light and stabilize them in systems of signs.

Peirce contended in a rich passage (CP 1.381) that “... every kind of consciousness enters into cognition” – and by extension into semiosis, since for Peirce all cognition is defined as sign processes or forms of semiosis. Feelings “form the warp and woof of cognition ... the will, in the form of attention, constantly enters,” but “cognition is neither feeling nor the polar sense.” It is “consciousness of process, and this in the form of the sense of learning, of acquiring, of mental growth.” This process cannot be “contracted into an instant.” It is “the consciousness that binds our life together. It is the consciousness of synthesis” (CP 1.381). This process of synthesis, Peirce holds, is supported and structured by pervasive processes of signs growing out of signs, a process of infinite semiosis. The combinatory power of signs generates new possibilities of interpretive syntheses, including the interpretive syntheses of self-reflection and self-criticism (see Innis 2019a, b for applications).

Peirce defines what a sign is and does with deceptive generality:

A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign that it creates I call the *interpretant* of the first sign. The sign stands for something, its *object*. It stands for that object, not in all respects, but in reference to some sort of idea, which I have sometimes called the *ground* of the representamen. (CP 2. 228)

On the basis of this characterization, Peirce proposes three analytical paths for semiotics. A grammatical path determines what makes it possible for any sign to “embody any *meaning*.” The logical path examines the conditions of how any sign is linked to its *object*. The rhetorical path seeks to establish how “one sign gives birth to another, and especially one thought brings forth another” (CP 2.227–9), that is, the generation of interpretants, the “thought-signs” by means of which we access the object referred to by, and determining, the sign.

For present purposes, framing the semiotic grounds of possibility, the principal focus will be on (a) Peirce’s classic schema of how signs are related to their objects, a logical relation, and (b) the consequent differentiation of interpretants, what Peirce called “the proper significate effects” that each type of sign gives rise to, or ought to give rise to, in the life of interpreters.

The logical relation between signs and objects yields three main classes of signs: icons, indices, and symbols.

An *icon*, in Peirce’s formulation, is a “sign which refers to the Object it denotes merely by virtue of characters of its own, and which it possesses, just the same, whether any such Object actually exists or not” (CP 2.246). Iconic signs such as images, diagrams, models, algebraic equations, and so forth refer to their objects, which can be purely “internal,” as in works of the imagination, by reason of their *material quality*. The icon, which Peirce also called a *qualisign*, a sign of quality, is linked by association and by some sort of “resemblance” to what it is “about,” that is, what is *presented* in and by the structure of the iconic sign itself. It embodies a quality and is a

correlate of feeling, grounded in the first mode of consciousness and its generative powers of constructing images, both internal and external, that stabilize and schematize the subjective world of the flux of feeling. Icons can embody or make perceptible, by the complex material qualities of their elements, forms of feeling of every sort, as the history of art shows as well as the rich world of mythic imagery and rituals (Langer 1953; Innis 2009).

An *index* is a “sign which refers to the Object that it denotes by virtue of being really affected by that Object” (CP 2.247): traffic signals, marks on trees on hiking paths, footprints in the snow, a blush, but also paradigmatically the pointing finger or furtive glance, or demonstrative and personal pronouns (Tallis 2010). Indexical signs, whether natural or constructed, denote or draw attention to something existent to which it is linked, the second Peircean mode of consciousness. Without an object there would be no index. They mediate adjustments, whether by pragmatic action, functioning as signals, or in perception, functioning as criterial properties of an object or situation. Indices belong to the world of *resistances*, controlling attention to their objects.

A *symbol*, in Peirce’s specific use of the term, is a “sign which refers to the Object that it denotes by virtue of a law, usually an association of general ideas, which operates to cause the Symbol to be interpreted as referring to that object” (CP 2.248). The “law” is the principle of language in its generalizing function. A symbol arises out of a creative synthesis of reducing a multiplicity of objects to a unity and that most fateful of all acts – giving names to things, also new names, and combining them on the basis of acts of abstraction that both divide the experiential field into units and group these units into classes and relations of different levels of generality. Symbols are grounded in the third mode of consciousness.

The upshot of Peirce’s distinctions, which are widely accepted, is not that these types of signs run on separate tracks, but that the human level of sign use, the distinctively *symbolic* level paradigmatically illustrated in language, incorporates within the free water of consciousness three intertwined and simultaneously operating

semiotic modes. Just as every mode of consciousness enters into cognition, so every mode of consciousness enters in some way into semiosis on the distinctively human level, the level of “synthetic consciousness, binding time together, sense of learning, thought.” About this dynamic interrelation, Peirce wrote in a provocative passage:

Symbols grow. They come into being by development out of other signs, particularly from icons, or from mixed signs partaking of the nature of icons and symbols. We think only in signs. These mental signs are of mixed nature; the symbol-parts of them are called concepts. So it is only out of symbol that a new symbol can grow. *Omne symbolum de symbolo.* (CP 2.302)

The sign systems in which we live and whose powers we both utilize and are subject to work in concert together. They enable new forms of feeling, fields of action, and systems of thinking by acts of what Peirce called *abduction*, the risky *seeking of signs* to articulate the senses of a world in constant development. The meanings that signs give birth to or open up in both their creators and their interpreters are *interpretants*, the proper significate effects of the sign-configurations that capture in various ways the various senses of the world. The notion of an interpretant is an indispensable component of an analysis of the general structures governing the possible effects of signs.

Peirce proposed various alternative schemes of interpretants. One scheme divides interpretants into immediate, dynamic, and final. Another scheme divides interpretants into emotional, energetic, and logical (Nöth 1990, pp. 43–44). Both schemes mirror Peirce’s schema of modes of consciousness either implicitly or explicitly, but they foreground or emphasize different aspects.

As to the first scheme, Peirce describes the *immediate* interpretant as “the Quality of the Impression that a sign is fit to produce, not any actual reaction” (1998, p. 499; CP 8.315). Other formulations define it as “the total unanalyzed effect that the Sign is calculated to produce” [...], or “the peculiar Interpretability” of the sign “before it gets any Interpreter” (Hardwick and Cook 1977, pp. 110–111). The *dynamic* interpretant is “the

direct effect actually produced by a Sign upon the Interpreter of it, [...] that which is experienced in each act of interpretation and is different in each from that of any other” (Hardwick and Cook 1977, pp. 110–111). The *final* interpretant is “that which would *finally* be decided to be the true interpretation if consideration of the matter were carried so far that an ultimate opinion were reached” (1998, p. 496; CP 8.184) or “the one Interpretative result to which every Interpreter is destined to come if the Sign is sufficiently considered” (Hardwick and Cook 1977, p. 111). The underlying schema here is Peirce’s categories of consciousness, the triad of feeling of quality, reaction, and thought.

As to the second scheme, Peirce admits as a “provisional assumption” that it is “pretty near to the general truth” that an interpretant “is, at least, in all cases, a sufficiently close analogue of a modification of consciousness” (1998, p. 411). The *emotional* (or *affective*) interpretant of a sign is the modification of the very “tone” or “distinctive feel” of consciousness. It is the modification or constitution of a *resultant feeling* by a sign whose object is a *quality*, that is, an iconic sign. The *energetic* interpretant is a *felt interruption or directing of attention* by a sign whose object is some *resistant* other, that is, an indexical sign. Peirce’s *logical* interpretant, paradoxically, is not determined by a sign’s being determined by an “object” already existent. Peirce holds that the logical interpretant does not correspond with any kind of object but rather with an “idea” – the “thing-meant” – that both determines and is determined by the sign to which it is linked. This is clearly the case in both the normal and creative use of language, where thoughts are continuously “translated” or “unfolded” into other thoughts and thoughts about thoughts and so on as experience continues to outrun the linguistic schemes in which it is captured.

Peirce’s semiotics sees semiosis as resulting in a “series of successive interpretants” without end (CP 2.303). Thinking in signs is an essentially dialogical process, whether the dialogue partner is another person or oneself. Peirce contended, following a long line of philosophical reflection and confirmed by Vygotsky and many others in

classic studies, that “thinking always proceeds in the form of a dialogue—a dialogue between different phases of the *ego* – so that, being dialogical, it is essentially composed of signs” (CP 4.6). The engendering of interpretants by signs is the unending progressive unfolding of possible interpretive construals of experience and, to extend what Peirce said about the logical interpretant, “must, therefore, be in a relatively future tense” (1998, p. 410).

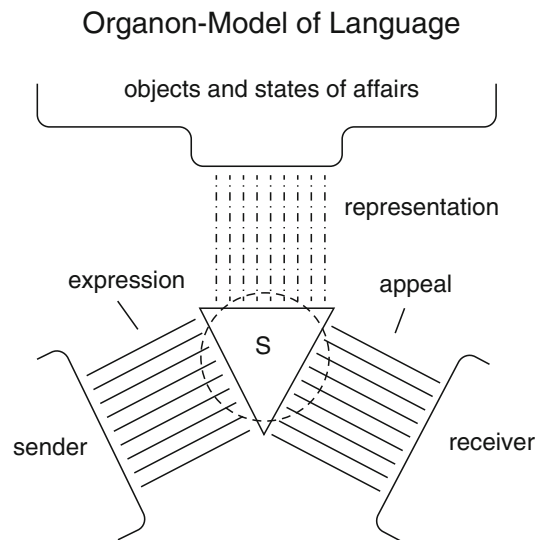
This future tense of human semiotic systems quite generally is the source of their ability to capture the spiraling resting places and transitions in the flux of experience that, as William James wrote, grows by its edges. Experience is haunted by that sense of an “overmore” or of an indefinite open that is rendered intense in unending objectifying processes of semiosis. The great contribution of a Peircean semiotics is to show how the action of signs sets us in motion on all levels of our existence. It frames in creative fashion central universal principles of semiotics that establish how the human use of signs generates by its own nature signs of possibility, which we become aware of in what Peirce called that “second step” in the use of language where it turns explicitly upon itself and in the process brings itself to mind in its semiotic reality.

Language, Abstraction, and Diacrisis

Karl Bühler offers such an analytical framework in his classic work, *Theory of Language* (1934), which examines the paradigmatic special place of language in exemplifying and revealing general principles governing sign systems. Bühler is most famous by reason of his organon-model of language that diagrams the constitutive elements of a “speech event” Fig. 1.

Bühler explains the import of this model in a compact gloss:

The circle in the middle symbolizes the concrete sound phenomenon. Three variable moments on it are capable of raising this phenomenon in three different ways to the rank of a sign. The sides of the drawn-in triangle symbolize these three moments. The triangle encompasses, in one



Semiotics, Fig. 1 Organon-model of language

respect, less than the circle (the principle of abstractive relevance). In another direction, however, it surpasses the circle, in order to indicate that the sensibly given constantly experiences an apperceptive enlargement. The multitude of lines symbolizes the defined semantic relations of the language sign. It is a *symbol* by reason of its being coordinated to objects and states of affairs; a *symptom* (*Anzeichen, indicium*: index) by reason of its dependence on the sender, whose interiority it expresses; and a *signal* by reason of its appeal to the hearer, whose outer or inner behavior it directs just as other communicative signs do. (1934, p. 28)

The triad of signs composed of *symbols*, *signals*, and *indices* is correlated with the three semantic functions of *representation*, *appeal*, and *expression*. The focal point of Bühler’s model is the analytical power of the notion of *apperceptive enlargement of the sensibly given* material sign-configuration as the result of *abstraction*.

The *expressive* function carried out by the *symptom/index* is a feature attached to its source, which in Bühler’s model of a speech event is assimilated to a “sender.” But such a notion can clearly be extended from the realm of a “toned” speech event to the “expressive face” of anything experienced, whether object or situation, their “material quality.” The *appellative* function carried out by the *signal* effects a steering of inner

and outer behavior of the perceiver. The signal's source clearly need not be an intentional sender but features of any environment, natural or social, in which we act and which steers or even controls our behavior. Bühler (1934, p. 34) notes that the antecedents of these functions on pre-human levels are found in Uexküll's notions of "perceptual signs" (*Merkzeichen*) and "effector" or "operative signs" (*Wirkzeichen*).

Bühler points out that the ways signs are differentiated from one another by diacritical markings model their semiotic powers to effect differentiations in the world and thereby carry information. Diacrisis is the conceptual core of the *principle of abstractive relevance*. It is exemplified in phonology's fundamental distinction between a phone, the physical or tonal reality of a word, studied by phonetics, and a phoneme, which is phonology's concern:

Phonemes are sound marks in the word's tonal reality and in every word they can be counted. But the word-image is also Gestalt-like, it has a tonal face or aspect, that also changes like a human face in the changing course of the expressive or appellative function. (1934, p. 258)

In the *representational* function, only the sound marks necessary for identifying the word as *this* word are *relevant* for linking it to its object. Words are symbols, free creations, not copies of their objects. The naming activity of words is not systematically dependent on their tonal faces. The identification of what the word itself is, across all tonal or accentual variations, involves abstraction of "sound marks," just as identification of objects of experience as *these kinds* involves abstraction of their defining features:

Phonemes belong to the class of marks, properties, criteria, notes: they are sound properties on the tonal picture of the world and constitutes the correlate to the properties of things, which we have known from time immemorial in logic and have characterized as marks or, in Latin, as 'notae.' (1934, p. 278)

Phonology is rich in implications about the linking of perception and symbolization in the human functional circle:

The linguistic fixating and grasping of perceived states of affairs is prepared and rooted in the processes we are accustomed to calling 'perceptions'

and to separating off in an unjustifiably rigorous way from a 'following' linguistic apprehension . . . The orientational instrument of human language which is produced in linguistic intercourse potentiates what the natural signals and symptoms accomplish, which we derive through perception from things and our speech partners and to which we are indebted. (1934, p. 252)

Diacrisis and abstraction mark every level of our meaning-filled interactions with the world in continual processes of *marking differences*. Perceptual segmentation and classification both ground and are taken up into our language schemes, which are not laid over experience as a veneer. There is a constant mutual adjustment of perceptual clues and sign systems of various sorts since experience outruns our ability to catch it in our symbolic nets. Indeed, these symbolic nets, seen by Cassirer and Peirce as "free creations of the spirit," themselves generate new experiences by exploiting their semiotic potentialities and interrelations.

This complex process of mutual adjustments and exploitation is the generative matrix or ground of novelty and possibility of discovery. Polanyi, whose great chapter on articulation is indebted to Bühler, (1958) writes:

To classify things in terms of features for which we have names, as we do in talking about things, requires the same kind of connoisseurship as the naturalist must have for identifying specimens of plants and animals. Thus, the art of speaking precisely, by applying a rich vocabulary exactly, resembles the delicate discrimination practised by the expert taxonomist. (p. 81)

The experienced limitation or inadequacy of a classificatory scheme can lead to the discovery and development of novel classificatory schemes even, and especially, for ourselves. Charles Taylor (2016) writes that naming the basic dimensions of our lives, like pride and anger, is not like naming a toothache: "We develop a rich vocabulary of reasons and occasions for pride, anger, and the rest. And thus, these basic words are foundational to the shape of meanings for us, rather than reordering this shape" (p. 200).

Moreover, the latent predictive power of new concepts and classificatory schemes can "run ahead" of experience and lead us to look for

novelties previously unnoticed in the flux of experience. The formalized symbol systems of mathematically dependent research programs have many instances of this. The rich image-configurations in the various art genres, no matter what their medium, capture in the organization of their material forms the multidimensional significances of ongoing experience and create or project in new image-configurations novel forms of experiences.

Summary Conclusion

Semiotics shows us how we put ourselves not just into words but into all those ordered forms – images, rituals, narratives – that make up the symbolic web we are constantly weaving and in which we have irreversibly entangled ourselves. The productive logic of human semiotic creativity spins out dynamic open fields of diverse possibilities of articulating the senses of the world and of the very shapes of meanings that our lives are to take. Articulation of the senses of the world is not a purely designative or representational process that leaves the world or ourselves unchanged. John Dewey wrote about language, Jakobson’s “purely semiotic system,” that it is not like a pipe conducting water. Such is the case with the panoply of human sign systems that grow out of the language animal’s power to embody its meanings in other ordered forms (Langer 1942, 1967; Stenner 2017). Neither language as a discursive form nor the domain of presentational forms that capture in affect-laden images the felt significances of experiences merely passes on “perceptions, sentiments, and thoughts which are complete prior to language” (1925, p. 169). Dewey is right to claim that “the heart of language is not ‘expression’ of something antecedent, much less expression of antecedent thought” (1925, p. 179). But this is also the “heart” of human forms of semiosis: the unending production of symbolic forms that make up the symbolic web that enables us to have these perceptions, sentiments, and thoughts in the first place as something distinctively human.

Cross-References

► Novelty

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Serendipity

Wendy Ross

Department of Psychology, Kingston University,
Kingston, UK

Abstract

Serendipity is a fortuitous accident; the exploitation of luck by a prepared mind. It is a framework for understanding how luck becomes actualized through human activity. It is widely studied across domains as varied as philosophy, information studies, and innovation research and is most often cast as having a role in the uncovering or generation of new ideas by provoking insight through unintended and unplanned bisociation. Serendipity has been credited as a key component of various inventions, creative inspiration, or unlikely yet fortunate happenings with varying degrees of

engagement with its relational ontology. It is thus an integral part of any understanding of the possible because it provides a bridge from the possible to the actual. This entry will define the key types of serendipity and the models which can be used to understand it before examining the evidence suggesting there are differences in personality and environments that may be more facilitative of serendipitous occurrences.

Keywords

Serendipity · Accident · Luck · Problem-solving

When we consider the possible (i.e., what could be and what could have been), it is rare that we do so without invoking luck. In lay terms, luck is often the magic ingredient that bridges the possible and the actual: the element beyond human control that allows the potential possibles to become concrete actuals. This applies when we consider possible pasts as well as possible futures. We wish people luck when they set off to pursue an unknown possible, and we will often assign luck a significant role in shaping the present from the many possible paths that could have been taken. Any model of our understanding of uncertainty and possibility would be poorer without a consideration of the role of luck. However, luck is by its nature arbitrary and unreliable; it resists theorizing or empirical investigations (de Rond 2014). Moreover, it is inert until it is enacted. Perhaps a better conception of the role of chance relies on both contingent luck and personal attributes (e.g., Austin 1979). It is here that the framework of serendipity is useful to understand this emergent interaction. Serendipity is closely related to luck and in the popular lay understanding is used synonymously with no more than good fortune, but a more precise definition is a mixture of both “accident” and “sagacity”. This addresses the arbitrary element of luck. Rather than being simply random happenstance, serendipity becomes a form of transactional luck; a relational phenomenon emerging from a person, a time, and a place.

Definition

The word serendipity was coined by Horace Walpole in his report of the story *The Three Princes of Serendip* where the princes made “discoveries by accident and sagacity.”¹ It has fallen in and out of fashion since 1754 but in 2000 was voted the UK’s favorite word (Ezard 2000). While Walpole coined the word, he obviously did not invent the concept. Furthermore, a pure definition is still elusive, and the boundaries of serendipity are somewhat elastic. This is exacerbated by the story of the three princes that Walpole used to illustrate the new word. This story arguably does not actually reflect his own definition, that is, “making discoveries, by accident and sagacity, of things which they were not in quest of” (cited in Merton and Barber 2004, p. 2), rather the princes’ discoveries could be more clearly put down to a form of intelligent abductive reasoning. Merton and Barber (2004) suggest this word has subsequently functioned as a cipher, allowing writers the opportunity to rewrite definitions to reflect their own preconceptions. However, despite the lack of clarity, the various definitions found in the literature converge on a fundamentally relational concept. There are normally three integral facets: environmental, personal, and temporal. Serendipity involves the right person in the right place and, crucially, is conceived of as a process operating on different timescales rather than a single occurrence. Finally, serendipity is only serendipity if it is recognized as such (Copeland 2017; de Rond 2014; McCay-Peet et al. 2015).

Indeed, from its inception serendipity has been seen as this combination of luck and personal properties. From Walpole to Louis Pasteur’s “le hazard ne favorise que les esprits préparés” (cited in Van Andel 1994, p. 163), writers on serendipity emphasize its dual nature with varying degrees of poeticism. Shulman (2004, p. xiv) suggests it is “a process hovering ambiguously between the [...] incisive mind and the wheel of fortune,” and

¹For a summary of the most cited story from *The Three Princes of Serendip*, see Van Andel (1994, p. 632).

Copeland (2017, p. 1) describes it as being “at the intersection of chance and wisdom”. In all definitions, the serendipitous process emerges from an interplay of external and internal factors, and, crucially, both are necessary. Material and social worlds are dynamically entwined and produce a rich array of possible perceptions and action affordances. The fortuitous and felicitous qualities of some of these possibilities are the main study of serendipity.

It is this relational nature that differentiates it from random chance and mere accident (Foster and Ellis 2014). de Rond writes to “equate serendipity to chance is to unravel but part of a far more promising plot” (de Rond 2014, p. 342). Schulmann exemplifies its relational and temporal nature in his introduction to Merton and Barber (2004) with the tale of Robert Barber being drawn to the word serendipity while reading the dictionary looking for another word. This tale is only complete when we realize that he came across the word several months previously and yet did not pick up on its properties. It was only when Barber was attuned to the concept and open to exploring its implications that it became important to him. A prepared mind is not constant, rather it is temporally contingent. Luck is useless without the right person (or organization) at the right time to capitalize on it (Cunha et al. 2015). A person cannot create serendipity on her own and neither can an environment, however full of potential it may be. Serendipity, then, is contingent on the interaction between the environment and the person and thus requires a truly systemic way of regarding human behavior.

Types of Serendipity

While it has been widely acknowledged in passing, serendipity has yet to be the focus of a mature and systematic research program which characterizes other fundamental concepts such as creativity. While there has been a steady increase in research over recent years, there is a somewhat disjointed theorizing about serendipity; there are almost as many types of serendipity as models

describing them (Van Andel describes 17 serendipity patterns drawn from his extensive collection), and serendipity as represented in the research literature is heterogeneous and fluid. This is in part an inherent characteristic of the concept: it arises from an unplanned interaction between person and environment and will, therefore, be inconsistent and complex. It seems unlikely that a phenomenon which is more often used as a dumping ground for uncertainties and which is inherently unpredictable would yield a clear definition.

However, there is a general consensus converging on four basic types of this multifaceted phenomenon. They have most recently been categorized by Yaqub (2018) using the names of prominent serendipity theorists in relation to scientific discoveries, and the categories he proposes broadly reflect those addressed by other writers such as de Rond (2014). These four types vary along the dimensions of the purpose of search undertaken and the nature of the eventual solution: A search can either be planned or unplanned and can yield the solution to the existing problem or a novel one.

First is pure Walpolian serendipity, in which investigators searching in one problem space make a discovery in a different problem space. Yaqub gives the example of the discovery that *sildenafil citrate*, which was being trialled as a cure for angina, also worked as a cure for erectile dysfunction. Second, a targeted search which finds the solution in the same problem space but through an unexpected route. This is described by Yaqub as Mertonian serendipity. de Rond exemplifies this sort of serendipity by the steps that led Watson and Crick to identify the double helix. External triggers (both people and things) enabled them to solve the original problem but in a serendipitous manner. This type of serendipity is sometimes referred to as pseudoserendipity (Roberts 1989) to distinguish it from pure unsought findings. However, it has been recently argued that if we shift the focus from the problem solution to the problem as being the method of solving the original problem, then this distinction between pure and pseudoserendipity is less clear (Arfini et al. 2018).

Third is finding the solution of a pre-existing problem when there is no particular aim to solve any one problem (Bushian serendipity). Yaqub gives the example of Wells who noticed a man who had injured his leg while under the influence of laughing gas and who felt no pain, an observation which triggered the use of laughing gas as an anesthetic. Finally, an untargeted research program may lead to an accidental discovery which only becomes realized in the future. In this case, neither the problem nor the solution exists at the moment of discovery. This is Yaqub's Stephanian serendipity, and he illustrates this with the example of Benedictus who discovered that a chemical mix resulted in a thin layer over the glass in a flask stopping it from shattering. This accidental discovery later became the basis for safety glass.

Of course, actual examples of discovery and innovation are rarely able to be neatly parcelled, and the boundaries between these categories are fluid. What is important to note is the unexpectedness of the discovery across all four categories. Whether the actual discovery or the method used to reach that discovery, serendipity involves unanticipated and unplanned actions. As Copeland (2017) argues, it is impossible to announce in advance that there is going to be a serendipitous moment; by its very nature, serendipity is unplanned and unexpected. It is also iterative: recognition of serendipity leads to changed behavior which consolidates the serendipity (McCay-Peet and Toms 2015). This unexpected nature points to an uncovering through chance of other, unconsidered possibilities.

Serendipity taxonomies classify serendipity not solely in terms of the event trigger, but in relation to the preceding events and the activities of the person. Serendipity is thus temporally relational – it is contingent on past and future categorization and varies according to these. The same event, if it solves a problem already posed, is considered to be a different sort of serendipity than when it suggests a solution to a non-posed problem. In other words, the same event would be categorized differently depending on the program of problem-solving that had led up to it and is therefore also contingent on human interpretation. The instability of serendipity as a concept is a

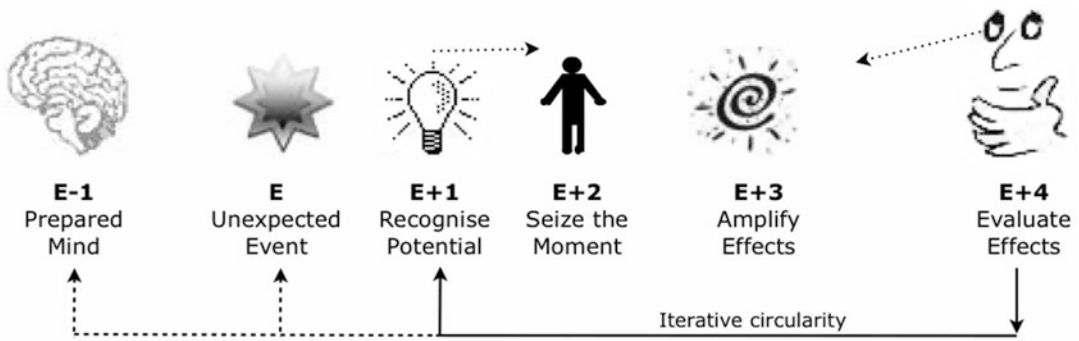
reflection of two things: its enmeshed and entangled nature and the methodology which means it is only seen retrospectively.

Serendipity as a Process

Van Andel (1994) emphasizes this temporal nature of serendipity suggesting that Columbus's discovery of the New World was only considered serendipitous when it was realized that he had not landed in India. This illustrates an additional complexity from which serendipity suffers: It needs to be recognized as serendipitous to "count" even when exactly the same actions and discoveries might not be considered serendipitous by another. This recognition has to come after the event because it is impossible for it to come prior to it. Indeed, it may also change depending on the vantage point in the post event timeline. In this way, it suffers from some of the complexities inherent to creativity where linking creativity with social value accords it an unstable ontology (e.g., Weisberg 2010). It is, therefore, not clear whether serendipity can exist outside of people's understanding of it. And it is, therefore, doubly dependent on people – both at time of the event and in making sense of the event afterward.

Lawley and Tompkins' (2008) model (Fig. 1) focuses on this temporal aspect of serendipity and explicitly refers to a serendipitous process rather than a single moment. They make a distinction between synchronicity, where two events happen simultaneously, and serendipity, which may arise from synchronicity or from ordinary events. Within their model all six stages have to occur for an event to be considered serendipitous, and serendipity therefore only occurs post hoc, in the state when it is evaluated by the person experiencing serendipity.

As is clear here, the model refers to a process that wraps around an event. Most of the model is concerned with what happens after the event, and thus the focus is on the role of the person in creating serendipity. The model starts with a "prepared mind" (E-1). Then the event (E) occurs. For E to be considered serendipitous, it must also be recognized as potentially useful, exploited, and



Serendipity, Fig. 1 “Stages of serendipity” taken from Lawley and Tompkins (2008). (Permission granted by the authors)

then evaluated. However, as Makri and Blandford (2012a) argue, while the focus on the process in this model is important, the actual character of that “unplanned and unexpected event” is left rather unclear. As is common in earlier explorations of serendipity, the focus here is on the person in the model rather than the event itself.

McCay-Peet and Toms’ (2015) process model (Fig. 2) has more room for the environment as a trigger for serendipity as part of an overall process. Their model posits an instant phenomenological aspect of serendipity (which parallels the more widely investigated “aha” experience in insight problem-solving, see Danek et al. 2014). However, within an organization for a moment to be serendipitous, it must often be followed up and worked on with varying levels of granularity. This capturing of the moment of serendipity and cementing it is often absent from other models. It is only then that serendipity occurs: both the practical outcome and the feeling that accompanies it are required. Indeed, this model emphasizes the perception of serendipity. It is not enough for all the aspects to come together; there has to be a “feeling” of serendipity to accompany it for the process to be cast as serendipitous.

So we see that serendipity is theorized as emerging from an interaction between a person or people and the environment in which they are located and situated in a timescale. Again, in this model, serendipity only happens when it is recognized as such by the people making the discovery. Without this awareness of serendipity, an event is not categorized as such.

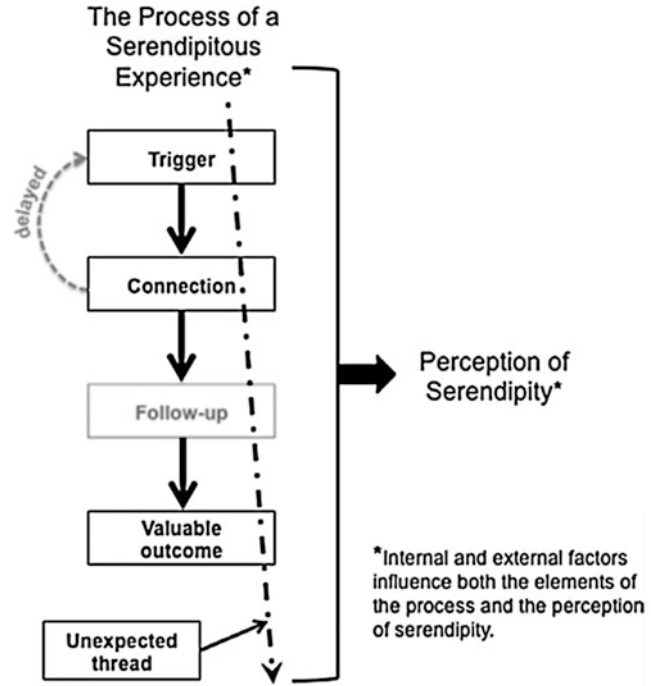
For an event to be serendipitous, the past is important because of both the nature of the narrative framing and the way the mind of the person experiencing serendipity has been “prepared” (Yaqub 2018). Furthermore, because serendipity is often characterized in hindsight, as the end point of a process, the evaluation of the product in that moment is also important. Finally, the future is also key to the recognition of a moment as serendipitous – the evaluation of the happy accident necessarily requires a projection into the future (Copeland 2017).

Just as serendipity is integral to an understanding of what is possible, so the possible is integral to understanding serendipity. The fortuitous aspect of the phenomenon means that it is only serendipitous in relation to the other possibles. The human judgement of the moment can only happen against a backdrop of awareness of other possible outcomes. Serendipity becomes a way of characterizing the path taken which allows for unplanned and unexpected events to play a role in both the possible and the actual.

Individual Differences

Despite evidence that there is a weak link between individual differences and serendipity (McCay-Peet et al. 2015), as discussed above, the majority of serendipity research considers people’s role at the center of serendipitous encounters. This is not unreasonable: it is the addition of sagacity which raises serendipity from accident or random chance

Serendipity, Fig. 2 “The process of a serendipitous experience” taken from McCay-Peet and Toms (2015). (Permission granted by the authors)



and, traditionally, this has been the focus of much theorizing. For many writers it is these internal characteristics that provide the element of control of serendipity (Foster and Ford 2003), and, in wider folk psychology, there are personal characteristics that have commonly been associated with “making your own luck.” Indeed, de Rond (2014) suggests that the only proper analysis of serendipity is the focus on human agency. He suggests that we should conceive of it as a capability, that of being able to match two disparate events.

Makri and Blandford’s (2012a) model, drawn from several interviews with academic researchers, leans heavily on how a person responds to “bisociation” – that is, a new mental connection – which, in their model, can come from the environment or also from a memory. Thus, for Makri and Blandford, serendipity can arise completely internally, and there is a new focus on internal processes. This is also similar to the second half of McClay-Peet and Toms’ model which refers to the process of creating a link between the trigger and either (a) a previously conceived problem or (b) a new, unthought of idea which occurs internally. However, this may not only be difficult to identify but also widens the

definition beyond the core relational aspect which has defined it thus far.

There have been many attempts to define the internal characteristics that make someone more likely to take advantage of a serendipitous moment. Race and Makri (2016) identify four traits: being curious, observant, alert, and assiduous. Rubin et al. (2011) describe two personality traits emphasized in the literature that allow someone to experience more serendipity: noticing and preparedness. All these characteristics describe a person who is highly attuned to the surrounding environment centering that relationship. Indeed, Rubin et al. suggest that the noticing aspect of the person is equally shared with the environment which will highlight things that should be noticed so it becomes impossible to unpick which is most salient. This bidirectionality is also stressed by Björneborn (2017), who discusses three key serendipity personal factors (curiosity, mobility, and sensitivity), but, crucially, these are contingent on and inseparable from the external serendipity factors. This reflects the relational and contingent nature of the phenomenon. There is a tendency in psychological research to focus on human factors, but, in serendipity research, it is impossible

to separate these from the environmental factors – not only are both of them necessary, but they often interact.

Environmental Factors

Beyond the individual differences that may dictate whether or not a person takes advantage of serendipity, researchers are becoming increasingly interested in the environments which facilitate serendipity. In the information retrieval literature, serendipity is seen as a by-product of browsing, and the direct nature of internet searching reduces the likelihood of coming across something unplanned (Foster and Ford 2003). Especially in the fields of information encountering, much of the current interest in serendipity stems from a concern that the increasing digitization of information will reduce flexibility and with this the chances for serendipity. However, this is also an area under much debate with others claiming that the open environment of the internet facilitates accidental discovery by allowing more and a wider range of connections (see Race and Makri 2016 for a summary of the debate occasioned by Gup's 1997 essay "The End of Serendipity").

In a complementary paper to their model cited above, McCay-Peet et al. (2015) go into more detail about the aspects of the environments necessary for serendipity. They are particularly interested in the types of trigger in an environment which can precipitate serendipity in information acquisition. Three forms of trigger were extracted from interviews with researchers: (a) verbal, (b) textual, and (c) visual. The verbal trigger was the most often described, which reminds us that external triggers can be people as well as things – indeed, the authors found the social aspect of serendipity to be readily apparent. The trigger does not need to be immediate (although it can be), and there can often be an incubation delay. The facilitating factors they identify, those within the external environment, all relate to this first stage: an environment must be trigger-rich, highlight the triggers, facilitate recording of the triggers, and encourage the making of connections.

Perhaps the closest examination of serendipitous environments comes from Björneborn (2017, p. 3) who sees serendipity as an affordance or "usage potential." He identifies three key affordances for serendipity that encompass ten sub-affordances. Although he also identifies personal factors, he is unusual in skimming over these and devoting the majority of his framework to the affordances of diversifiability, traversability, and sensoriability. These all refer to the possibilities engendered by an environment.

Diversifiability refers to the diversity of content in an environment and covers the sub-affordances of diversity, cross-contacts, and incompleteness. An environment high in diversifiability facilitates serendipity because it allows for more accidental bisociations and juxtapositions. The clustering of possibilities in an environment increases the likelihood of one of those possibilities being actualized. Traversability refers to the potential affordances to move and access the diverse content. This covers the four sub-affordances of accessibility, multi-reachability, explorability, and slowability. These are four ways of making use of the topology of a given environment. This emphasizes the relational nature of serendipity: An affordance is only an affordance when it is used. Finally, sensoriability describes the way an environment appeals to all the senses and deals with how the environment can make different resources stand out for different senses. It covers the three sub-affordances of exposure, contrasts, and pointers.

A detailed examination of the environments that facilitate serendipity is possible alongside an understanding that, while personal characteristics and environmental characteristics may be necessary for serendipity, they are often not sufficient. These serendipitous environments can arise naturally or can be reinforced deliberately by design. Although there appears to be a paradox in planning for serendipity because serendipity arises from the unplanned, environments can be designed to create more opportunities for accidents to arise (Race and Makri 2016). The designers can plan for serendipity, but it is the users who must uncover things in an unplanned manner (Björneborn 2017).

Methodological Considerations

As we have seen, work on serendipity proceeds from mainly a posteriori position. Serendipity is identified after it has occurred, sometimes even after a significant amount of time has elapsed (Foster and Ellis 2014). The models arise from two different angles: either semi-structured interviews (Erdelez et al. 2016; Makri and Blandford 2012b; McCay-Peet and Toms 2015) or collections of reports of serendipity whether first or third person (Van Andel 1994; Yaqub 2018). There are no models currently that draw their evidence from experimental designs. For example, Yaqub (2018) compiled his taxonomy when given access to Merton's records of serendipitous events that had been sent to him over the course of his life. Van Andel's (1994, p. 631) "serendipity patterns" are based on an overview of his "collection of serendipities," and McCay-Peet and Toms' (2015) model is based on interviews with 12 Canadian academics and professional researchers.

Methodology and construct conception often form a bidirectional relationship: the operationalization of a concept informs the methodology used, but the reverse can also be true. The methodology used to elucidate a concept will inform our understanding of the ontology of that concept. The dominant methodology that has informed research on serendipity has also informed its emphasis. Serendipity is filtered through a lens of human agency because it is researched by asking people how they experience it. Yet, the theoretical basis of serendipity paints it as a relational concept, and, as such, both the external triggers and internal dispositions are necessary.

Serendipity is often conceived of as a process, and, indeed, many of the models that exist are process models. Again, models structure our thinking about a concept, often turning messy heteroscalar processes into linear, perhaps iterative, processes with an implied start and end point. The models reviewed here all suggest that serendipity only exists once it is conceived as such, and so they tend to focus on human agency. The process of serendipity is such that it can only occur when human agency is invoked, and, further, it is often proposed that it is necessary for a

human to categorize the moment as serendipitous. There is an ever-present tug toward a human-centric model of action, even in a concept such as this one which is, by its very nature, enmeshed and entangled. What is possible in serendipity studies is constrained by the way it is approached.

Conclusions

Serendipity is a relational concept emerging from the interactions of people and possibilities. It has a transactional logic – luck arises in the environment but becomes serendipity when it is realized by a person. Serendipity is perhaps best conceived as enacted luck. While it is unhelpful to consider the possible and the actual as diametrically opposed or in a linear temporal progression (possible leading inexorably to actual), an understanding of *how* the possible becomes actualized would be incomplete without serendipity; serendipity is the bridge between the two. Furthermore, serendipity can only be understood as existing in relation to other possible pathways, and so an understanding of the possible is also integral to our understanding of serendipity. We cannot categorize something as serendipitous without understanding how it has broadened our understanding of the possible and also how it stands in opposition to the other possibles. In the end, serendipity interacts with the possible to help us understand how we make sense of a messy world.

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Silence

Olga V. Lehmann

NIEFT – The Norwegian Institute for Emotion Focused Therapy / NTNU – Norwegian University of Science and Technology, Bergen, Norway

Abstract

The definition of silence is as vast as the definition of language, movement, noise, or sound themselves. It is so because rather than in opposition or mere contradiction to language, movement, noise, or sound (Kurzon, Discourse of silence. Amsterdam, John Benjamins: 1998), silence is that which blossoms in between them, in interdependence with them (Lehmann, The cultural psychology of silence. Treasuring the poetics of affect at the core of human existence (Unpublished doctoral dissertation). NTNU Norwegian University of Science and Technology, Trondheim, Norway: 2018a). Hence, silence is not to be understood as a pure emptiness, a pure absence, a pure pause: silence is rather a room for the possible. In between one musical note and another, in between words, in between body signals, in between our actions, in between the unexpected noises from the environment, there is a space and a time for being and becoming. Acting at times as a boundary that precedes the unfolding of the future, and at times as a

room for reminiscence or to deepen our present experiences, and some other times as the reminder of the uncertainty that belongs to our human condition, silence is always redirecting us somewhere; it enhances attention inward and outward.

Keywords

Silence · Silences · Silencing · Stillness · Multivoicedness · Meditation · Self-exploration · Contemplation · Presence Poetry

The Polysemy of Silence

Awkward silences? Mystic silences? Traumatic silences? Given that the word “silence” can evoke a vast range of human experiences, Bruneau & Ishii (1988) and Orlandi (1995) distinguish between Silence, silences, and silencing. According to them, as well as other further elaborations in psychology (Lehmann, 2016a, 2016b; Lehmann, 2018a), Silence in singular, and often with a capital S to begin with, denotes the ineffable experience described by artists and mystics as borderless emotional intensity of communion either with nature, a masterpiece of art, another being, or a spiritual entity. Silences refer to social interactions and communications, such as cues for taking turns in conversations, as well as the intentional uses of words and silences to avoid other themes of conversation. Silencing denotes dynamics of power such as rhetoric, or oppression, for example. Silence, silences, and silencing are interconnected with one another, and at times, some of them can occur simultaneously (Bruneau & Ishii, 1988).

Silence

Throughout history, Silence has been associated with the pursuit of values such as insight, wisdom, or beauty (Braman, 2007; Jensen, 1973; Sardello, 2006). It is an experience of expansion that often brings into our awareness the feeling of interconnectedness with the world and others. For many, these experiences transcend a mere psychological phenomenon and are better explained in terms of spirituality. The tonality of experiences that

Silence entails is available to us as human beings, often, but not all of us reach a language that is evocative enough of its intensity. Poets devote themselves to grasp this intensity more fully, and at times, one of the purposes of poetry is to evoke that which is ineffable (Paz, 1956/1999). Some of the realms of Silence have also been explored in different notions such as poetic instants (Bachelard, 1932/2013; Paz, 1956/1999), mystical experiences (James, 1901, in Schneider & Berke, 2008), or oceanic feelings (Ramakrishna and Freud in Harrison, 1989), just to name a few. One example of these aesthetic, contemplative, and meditative practices is *Chado* – The way of tea, the traditional Japanese tea ceremony (Murakami, 2017). As the example of the tea ceremony acknowledges, the aesthetic quality of embracing silence through standardized rituals fosters awareness of, and raises attention to, aspects of life that could otherwise be ignored.

Silences

In the context of our social interactions, for communication to be effective and assertive we need words and body language, but we also need of silences to give room for understanding, empathy, and reflection. We use spaces in between words and actions for different purposes, and those intentions can backfire at us if we do not bring enough awareness to the needs and wants beneath our uses of words and silences. Silences then refer to the space and time we take to process information, take turns, reflect, and deal with the hesitations that emerge as we are communicating with others (Bruneau, 1973; Mazzei, 2007).

There are diverse forms of silences, such as textual, situational, thematic, and conversational (Kurzon, 1998, 2007, 2009, 2013). Textual silences involve an intention to be concentrated or focused on a specific task, such as reading, by being silent (Kurzon, 2009). Situational silences are mainly group experiences that regard more ambiguous social cues, as there is an intention to be silent to promote a value, such as minutes of silence in memorials (Kurzon, 2009, 2013). Thematic silences refer rather to the uses of some topics of conversation to avoid speaking of others,

which remain then silent (Kurzon, 2009). Conversational silences take place when for one or other reasons one of the persons involved in a conversation does not respond or does not actively participate with words or actions (Kurzon, 2009). For example, in the context of psychotherapy these silences are assessed as either obstructive, neutral, or productive (Levitt, 2001a). While neutral silences indicate the client is using this space in between words to make associations or connect with different memories, obstructive silences show disengagement or repression (Levitt, 2001a; Stringer et al., 2010; Stone et al., 2012). Productive silences have different functions in the context of therapy, such as them being a sign of interpersonal connection, insight, and emotional expression (Levitt, 2001a). It is important not to underestimate those silences are dynamic and even obstructive silences can become productive silences may they be addressed in ways that enhance relational depth between the client and the therapist (Levitt, 2001b; Cooper, 2013). In other words, silences, being rooms for the possible, do not have a permanent meaning or emotional intensity.

Silencing

Silencing denotes authority and forms to impose power and control during social interactions (Bruneau, 1973). Even if the temporary dominance from one or the other parts in social interactions can convey a sense of order and direction, excessive or one-directed dominance brings unbalance and obstructs dialogue (Hermans & Gieser, 2011). For example, in the theory of the spiral of silence is argued that people who see themselves as part of a minority group would, often, conceal their perspectives due to their fear for being further isolated or oppressed (Noelle-Neuman, 2008). However, more theoretical and empirical attention is needed to better understand the complexity of emotional processes that lead to silencing (Lehmann, 2018a; Moy et al., 2001; Noelle-Neumann, 2008). Research on trauma and abuse sheds light to this issue. The need to be protected from discrimination, violence, abuse, or rejection can lead to conscious and unconscious silences, which can be dilemmatic because among

other things, these silences could be misunderstood as consent (Kurzon, 1998; Mazzei, 2007; McIntyre, 2013; Stone et al., 2012). At times, after having been victims of abuse, violence, discrimination, or rejection, people keep using silences as a form for self-preservation or as an attempt to overcome the traumatic experiences they have been through (Sorsoli, 2010). In other contexts, the perpetuation of silences has to do with people perceiving that they are in a lesser position in a hierarchy or that they have less authority than the other part, anticipating that their voice would not be heard or that they would affect the relational dynamic (Bruneau, 1973). An example of this is the relationship between doctors and patients, where patients more often than note fear to communicate to their doctors when they perceive that they are making mistakes (Schwappach, 2008). In other contexts, there are ideologies and sociocultural structures that make some topics become taboos, and people internalize authoritarian voices being less prone to speak of topics such as sexuality, race, politics, and so on (Freud, 1913/1999).

The “Polyphony” of Silence

In musical scores, silences have their own notation system and play a crucial role in the rhythm and melody of compositions. As in music, silences make part of the rhythm and melody of our everyday lives. Imagine silence being a room, a space where our attention is redirected inward and outward. Then, the explicit focus on what Silence, silences, and silencing entail can help cultural-developmental psychologists to explore attention as a higher psychological function, complementing previous theoretical advances in the study of memory, imagination, and creativity (e.g., Murakami, 2017; Wagoner, 2017; Zittoun & Glaveanu, 2016), just to mention some.

One important feature of attention, which silence sheds light into, is that we are constantly relating to simultaneous stimuli, some of them distracting us, or some others into the focus of our awareness. In the mind, these simultaneous stimuli could be, for example, feelings and emotions, thoughts, and images, which relate to

different external persons or versions of ourselves. Following the premises of dialogical self-theory further, one can consider the mind as a theater with different I-positions which can be external (a mother, a partner, a teacher) or internal (I-as-daughter, I-as-girlfriend, I-as-teacher). At times, the musical notion of polyphony is often used as a metaphor of the multivoicedness of the self (Hermans et al., 1992; Yamada, 2008). However, what is seldom acknowledged is that in musical theories polyphony refers to just one of the forms of the simultaneity of tones, voices musical instruments, and silences. That is, polyphony implies that these simultaneous stimuli or positionings of the self have different directions (Bakhtin, 1963/1999; Klempe, in press-b; Lehmann, 2018a, 2018b), whereas when the stimuli in a musical piece have a similar direction, it is known as homophony (Bakhtin, 1963/1999). Having made this precision, what exploring silence in everyday life can offer for psychology are the ocean of possibilities to explore these tensions that are formed between diverse positionings of the self as we relate to the environment and the inner activity of the mind.

Having acknowledged that silence is not a pure phenomenon, to study it we need to focus on its unfolding within the simultaneous coexistence of other phenomena. A general framework to do so is to explore silence in the crossroads with language, movements, noises, and sounds (Kurzon, 1998). While writing this article, I can hear the noises of the ventilation. The noise provoked by the movement of my fingers hitting the keyboard distracts me from time to time. I miss the sounds of the piano playlist I oftentimes use to accompany my writing sessions. I am not talking out loud, but the inner conversation I keep with myself as I write is accompanying this silent morning in Bergen. In addition, there is a melancholic emotional tune which coexists with me-as-writer: there is a grief and the wish to resolve a conflict with someone I deeply care about, and the constant idea that I cannot do much more than being silent and letting time heal what my words have implied. In this order of ideas, when we explore silence from the perspectives of multivoicedness and simultaneously, we can gain a deeper understanding of its

functions. For instance, silence can contribute to either bonding or separation, healing and wounding, exposure or concealing, assent and dissent, thoughtfulness, and emptiness (Jensen, 1973; Lehmann, 2018a). May we study higher psychological functions from a linear perspective, we could focus on one positioning of the self (e.g., I-as writer sitting in “silence” as I write), whereas what is actually occurring within a person who sits and does not talk is way more diverse and complex than that. More research is then needed following dialogical approaches in psychology, which give account of what are the processes that the multivoicedness of the self undergoes before, during, or after periods of inner silence (Lehmann et al., 2018).

Studying Silence

Perhaps one of the most prominent fields of research in relation to silence is that of meditative or contemplative practices, some of which are featured as mindfulness studies. There are several kinds of meditation practices, many of them relating to what is brought as the focus of attention (e.g., a mantra, the breath, body awareness) and what is the intention (e.g., relaxation, generating a virtue such as compassion, self-exploration of the contents of the mind) (Holen, 1976/2016; Siff, 2010). Either if approaching meditative practices in a secular or a spiritual way, the silence one searches through them is a path and an opportunity to tune with a sense of wisdom (Kabat-Zinn, 1994). However and again what appears as a misconception is that the silence experienced in meditation is an emptiness. Since the only way to experience a pure emptiness in silence would be to die (Cage, 1961), then to search for silence is to approach and detach from the contents of the mind. Such a movement of immersion in the felt intensities of an experience, as well as detachment, observation and reflection upon an experience opens a room for the ocean of possibilities for us to align our intentions, attitudes, and actions as we adapt to different circumstances. Therefore, silence is about being present with what is; it is a practice of noticing and intuition of the moment.

Once we master this craft, silence can convey us with the agility to balance the doing and the not doing, an agility and intelligence to adapt to life's circumstances and mysteries. In doing so, silence is a tool for us to bring the possible into real in terms of conscious choices that affect our creativity and relational depth, for instance.

Rather than encouraging people to avoid or feel ashamed for whatever is brought into awareness when we are sitting in silence, meditators could therefore be encouraged to accept and notice what are the feelings, thoughts, images, and fantasies that arise (Moniz & Slutzky, 2016; Siff, 2010). Meditating could be also then understood as a process of reconciling ourselves with the fact that we are our minds, and the observers of our minds, and that meditating is a path to investigate our minds (Thich Nhat Hanh, 1975/1995; Kirmayer, 2015). Therefore, it is not strange that the notion of silence is at times used as a metaphor of listening (Wideman, 2001). This is not as far as we might initially think, from notions that have been important in the history of psychology such as apperception, self-observation, inner perception, introspection, or insight. Either it being a laboratory or a religious setting, pursuing the knowledge about the mind has been revolving around using language to describe and express what appears in the stream of consciousness (Wagoner, 2013). For instance, Wilhelm Wundt used to train his study participants to report the contents of their perceptions, such as sharing out loud what was appearing in their stream of consciousness (Cattel, 1928). He defended the advantages of requesting immediate reports to avoid distortions in memory (Wagoner, 2013; Benetka & Joerchel, 2016). Later, the Würzburg School, following some of the premises of Wundt, used other methods for immediate reconstruction of mental activity as the study of self-observation (Humphrey, 1951; Hoffmann & Stock, n.d.; Benetka & Joerchel, 2016).

In addition to oral reports, journaling accounts have also been at the core of the registering and study of self-exploration processes (Allport & The Social Science Research Council, 1942; Siff, 2010; Lehmann, 2018a, 2018b). However, self-exploration is not just a matter of language, it is a

matter of uses and functions of silence as well. At times, silences give room for the associations between human experience and language to take place. In other occasions, the felt intensities of human experience transcend the capacity of language to fully express them. When looking across history of religion and philosophy, but also into the history of psychology itself, there are two features that are used to describe wisdom, values, and insight: silence and poetry. From Plato to Whitman and many more, there are several poetic descriptions about the value of silence for human beings (Corbin, 2018). Poetry, being the most musical nuance of language, is also the realm of language which is the closest to the depth of our emotional world, which is the closest to the ineffable, and which gives enough room not just for words, but also for what words cannot say. That is, the study of silence is interdependent of oral and written language that can describe what silence evokes, and other creative methods that include artistic expressions can also shed light to the emotional intensities that words often cannot (Lehmann, 2018a; Lehmann & Brinkmann, 2019).

Cultivating Silence, Silences, and Silencing

There are several forms to cultivate silence in our everyday lives. Following the premises that training mindfulness is to train our attention, our intentions, and our attitudes (Shapiro et al., 2006), we could argue that cultivating silence requires from us to clarify an intention for what we want to experience as silence, an attentional focus to what is considered silence and a distraction from it, as well as attitudes such as curiosity, gratitude, and patience, so as to let silence be our teacher. In general, we can say that we can cultivate silence in at least three ways: by means of listening, by means of saying, and by means of encountering, all of which can facilitate relational depth (Lehmann, 2016a, 2016b, 2018a).

In a nutshell, we can practice listening when we want to attend to what another is saying, by means of noticing distractors and bringing

awareness back to the words of the other. However, we can also practice by aiming at staying present when we do not want to listen to another person, but we know listening might be important. Similarly, we can practice silence when saying something by intentionally regulating the rhythm and contents of our words, and what which we chose not to say might be as important as what we say. Self-exploration via meditation, journaling, or therapy could help those who want to cultivate silence to become familiar with their attachment styles, personality traits, and sociocultural frameworks. This expanded understanding of the self can support them to better navigate the uncertainty that silence brings forward. For example, people who have avoidant attachment styles, introverted tendencies, and belong to individualistic cultures might crave, even if at times unconsciously, more solo space in interactions and appear as quieter in communication (Cain, 2013; Johnson, 2008; Triandis and Gelfand, 1998). What psychotherapy research has widely explored is that for silences and silencing to facilitate human connection and relational depth, they need a frame. Silence is a container of experience, a room for possibilities, and for these possibilities to be as aligned as possible with our desires and goals, some explicit lines are needed. In other words, from a perspective of clinical psychology we could argue that there are healthier ways for the possible to unfold than others. Silence facilitates a healthy unfolding of the possible when promoting insight, as well as an expansive, flexible, and dynamic understanding of the self, the world, and other beings. This expanded comprehension of reality can facilitate a sense of interconnectedness, dialogue, and virtuous actions. For example, when taking a time of in a heated argument it is important to acknowledge that the emotional overwhelm is too high to pursue communication, express the need for silence, and suggest a time when both parts are to return to the argument, and then proceed to activities that are soothing during the silent period (Gottman & De Clair, 2001). Given we might fail in recognizing our need for silence or our need to break silences in the context of social interactions, the craft of silence is also a craft of humility, patience, and

repair. Often it would be important to speak about the impact that silence is having in our emotional world, to reduce the uncertainty and expand our tolerance window to it.

When it comes to the realm of Silence, these are often experiences that are so emotionally intense that we can feel in communion with a piece of art, with nature, with another being, with ourselves, or with a spiritual entity. Either in secular or religious forms, Silence can lead to an experience of freedom and eudemonic happiness, given that the insights and wisdom gained during silence can help people better connect to human virtues (Lehmann et al., 2018). Several rituals across cultures serve the purpose of expanding our receptivity for such encounters. Just to give some examples of it, such as visiting religious temples or solo experiences in nature (Kagge, 2018; Lehmann, 2018b; Tangene, 2017), prayer (Sarah & Diat, 2017), aesthetics and art (Lehmann, 2018a, 2018b), spending quality time with others, attending to silent retreats of different forms, or being parts of cultural practices, such as the Japanese way of tea (Murakami, 2017). In line with these, there is already evidence from mindfulness research supporting the fact that embracing Silence expands the awareness and appreciation of beauty (Shapiro & Carlson, 2017). An important aspect of silence being a practice is that we also need to adapt to the tools that facilitate its experience. For instance, if thriving in the silence of nature, one needs to also have the skills for sailing a boat, hiking, climbing, or surviving in rough weather conditions (Kagge, 2018; Tangene, 2017). Or, knowing some techniques of how to master journaling in the alternation of sitting or walking practices of meditation, contemplation, or aesthetics, given that writing about such experiences can foster insight (Siff, 2010; Lehmann, 2018a).

This being said, the path of cultivating Silence, silences, and silencing in nourishing way requires from us to embrace our human condition and our existential givens. What happens when it comes to cultivating silence is that we human beings tend to idealize such experiences and assume that we need to flow into silence and spontaneously land into the intuition of what to say, how to say it, how

to listen, or how to be in communion. However, the intention to aspire for Silence, rather than the unrealistic expectation of perfecting it, is what can render it possible to keep self-exploration and relational depth as goals, while learning on the way what are the belief patterns, emotional injuries, and (or) traumas that separate us from achieving them. Several mystics have acknowledged that noticing fears, inner conflicts, and the diverse tensions that form mental activity are part of aspiring for silence and not necessarily a disruption of silence itself (Thich Nhat Hanh, 1975/1995; Saint Teresa of Jesus, 1577/2015; Merton, 1968/2000). The avoidance of the inner conflicts that silence sheds light into during meditative practices, for example, has been linked with diverse side effects such as regression to childhood traumas, arousal of narcissistic tendencies, and other psychological problems (Epstein & Lieff, 1981; Epstein, 1990).

Conclusion: Silence and the Possible

In our everyday lives, silence is a room for the possible. Either it is the possible understood as an outcome, as the way in which the future unfolds according or not to our expectations, a possible meaning to an experience, the deeper intensity of the present moment, or the awareness of the uncertainty that belongs to our human condition – silence is a container for us to feel into, as well as to better comprehend our experiences and our existence. When a person suddenly stops speaking, or a musician prolongates the space in between sounds, we wonder: What is next? Awkward silences in social interactions also evoke the challenges of making sense of the uncertainty that silence gives room for. However, uncertainty is a part of human existence, and silence just amplifies our awareness of uncertainty given the contrast that it represents in the flow of activities (Lehmann, 2018a). To cope with uncertainty, either consciously or not, the mind redirects attention inward or outward, and hence, studying silence is in one way or the other the study of attentional processes. Therefore, cultivating silence is a path for self-exploration and the

embrace of the human condition, befriending qualities such as culture, attachment, and personality, awareness of which can facilitate the alignment of practicing silence with clear intentions, attitudes, and focus of attention. Here, it is a room for psychology for further development and studies of higher psychological functions and consciousness. However, the dilemma this represents for psychology is that Silence is at times described as a psychological phenomenon and as a spiritual one. Given that in psychology the distinction between the mental and the spiritual has been dilemmatic and at times problematic, the ontological dilemma between the mental and the spiritual is therefore still to be further addressed in contemporary psychology.

Cross References

- ▶ Aesthetics
- ▶ Dialogical Self Theory
- ▶ Emotion
- ▶ Here and now
- ▶ Meditation
- ▶ Mindfulness
- ▶ Poetry
- ▶ Polyphony
- ▶ Sublime
- ▶ Uncertainty
- ▶ Wisdom

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Simulation

Henry Brighton and Wendy Powell
Department of Cognitive Science and Artificial Intelligence, Tilburg University, Tilburg, The Netherlands

Abstract

A simulation is an orchestrated series of operations used to model the behavior of a system. The system being simulated could exist, such as the world economy, have existed, such as a transition in evolutionary history, or be hypothetical, such as the synthetic world of a computer game. A simulation will typically model how a system develops over time, and potentially at a fidelity that is hard or impossible to

achieve using other kinds of model. Most simulations are specified formally, either mathematically or algorithmically, and executed on digital computers. As a tool for modelling and understanding the natural world, simulation is used throughout the sciences to model systems ranging from the global climate, financial markets, immune systems, power plants, and the origins of language. Simulation is possible and is the primary method of inquiry for fields, such as artificial intelligence and complexity science. More broadly, simulation is used to engineer virtual environments for training and entertainment, create artifacts, and explore design spaces. High fidelity simulations that operate in real time can blur the distinction between virtual and natural worlds. In each of these applications, simulation provides a way to create, analyze, manipulate, and crucially automate models with the possibility of an arguably unparalleled flexibility and scope.

Keywords

Simulation · Computer simulation · Virtual reality · Artificial intelligence · Artificial life · Complexity science

Introduction and History

Simulation techniques developed and flourished in parallel with the emergence of programmable computers during the 1940s. Attempts to develop automated, mechanistic models of natural and hypothetical systems, though, predate programmable computers and underscore several subtleties that make defining the concept of simulation problematic. For example, during the industrial revolution in the late 1700s, the term *computer* referred to a person employed to carry out the laborious arithmetic calculations needed to approximate various mathematical functions (Daston 1994). These calculations required following an iterative procedure known as Newton's method. With the goal of replacing these computers with a machine, Charles Babbage devised the difference engine in 1822. Babbage's

machine, when viewed as a means to model the activity of the people carrying out the calculations, simulated the work of the human computers. But when viewed as a means to implement Newton's method, however, Babbage's machine is more an example of automation rather than simulation. In the same way, a pocket calculator automates the operations of arithmetic rather than simulates them. Although such subtleties can make defining the concept of simulation problematic, most accept that the key characteristic of a simulation is that it models how one system develops over time by automating a different but related system that develops over time (Hartmann 1996).

Modern use of the term simulation almost exclusively refers to computer simulation. Indeed, the advent of fully functional stored program computing devices during the latter part of the Second World War spurred the development of the simulation techniques used today. During this period, Alan Turing laid the foundations for the theory of computation by formulating what are now termed Turing machines, notional computing devices that he imagined carrying out operations on a tape, much like a simulation of humans working with paper and pen (Turing 1937). Turing, in particular, considered how an appropriately designed machine could take as input the description of an arbitrary Turing machine and then simulate it. He also speculated how his machines could simulate other kinds of systems such as the nervous system (Turing 1948). Turing machines, conventional computers, and neural networks are models of universal computation, which means that they are formally equivalent to each other in the class of functions they can compute. Computer simulations are therefore restricted to modelling systems whose dynamics are tractably computable, which includes a huge diversity of systems which may otherwise appear unrelated to familiar computing paradigms and tasks. Turing didn't use the term simulation. Less than a decade later, though, a generation of theorists inspired by his work adopted the term when proposing a new field of research, artificial intelligence, which set out to examine the conjecture that any aspect of human intelligence could

be simulated by a computer (McCarthy et al. 1955/2006).

Mirroring the steady adoption of computers as tools for scientific research from the 1950s onwards, simulation has become commonplace in practically all areas of science, and more recently, in areas of inquiry preoccupied with innovation and the creative process, such as design and the visual arts (see ► [“Possible of Design”](#)). These varied uses of simulation can follow different methodologies and work toward different goals. In virtual reality and computer games, the ability to create and control high fidelity, high resolution models is often a key objective (see ► [“Virtual Reality”](#)). In contrast, when used as a tool for scientific inquiry, the goal of simulation is rarely to model a system as accurately as possible but to instead isolate a minimal set of assumptions needed to generate and explain some phenomena of interest. In each of these applications, simulation modelling makes possible the automation and control of potentially complex models in ways that are hard or impossible to achieve otherwise. As the following examples illustrate, simulation has become a highly productive means to explore the possible.

Simulating Possible Pasts: The Origins of Language

Simulation is ideally suited to modelling systems composed on many interacting parts that change over time in ways that are hard to predict. An archetypal application is evolutionary computation, a field of research focused on simulating the evolutionary process. Viewed at scale, most agree that life on earth has been punctuated by major evolutionary transitions, each introducing a new mechanism for information transmission across generations with the potential to drive the evolution of systems of greater complexity (Maynard Smith and Szathmáry 1995). For example, the evolution of the genetic code supported the transmission of larger genomes. The evolution of language, which is the most recent major transition, has proven to be particularly difficult to explain. Theories of how and why this complex

and highly structured yet idiosyncratic communication system emerged were banned from publication by the Linguistic Society of Paris by in 1866 due to being speculative and untestable (Stam 1976). The 1990s saw a resurgence in interest in these questions, which ultimately led to the development of evolutionary linguistics as a mature field of research (e.g., Hurford et al. 1998; Briscoe 2002). Simulation was instrumental to this development. It allowed a new generation of theorists to model and explore complex interactions between biological evolution, cultural evolution, and linguistic development within the individual. The ability to systematically study these dynamic systems using simulations lead to new theories, the assumptions and implications of which could be scrutinized in ways not available in the past (see ► [“Emergence”](#)).

Many of the theorists who adopted the methodology of simulation took the opportunity to challenge the traditional view that the characteristic structure of language is an expression of the genes (Chomsky 1965). One alternative theory rested on the conjecture that the structure of language is in large part an outcome of the process of repeated cultural transmission from one generation to the next (Kirby and Hurford 1997; Briscoe 2002). On this view, certain regularities in language evolve and persist due to being robust to repeated cultural transmission (Brighton et al. 2005). Initially, this conjecture was speculative, controversial, and in need of formal specification. Simulation allowed rapid prototyping of formal models providing proof of concept, followed by the systematic study of a wide range of initial conditions and assumptions that established the boundary conditions for the cumulative evolution of linguistic structure. Rather than develop increasingly complex, high fidelity models, the focus then turned to identifying the minimal set of assumptions, and the simplest models capable of explaining the evolution of linguistic complexity. In short, from the bewildering complexity of the many interacting processes that led to the evolution of language, the methodology of simulation not only spawned a revived interest in this previously speculative area of inquiry, it generated new and testable theories of how this major

transition in evolution occurred. The stages of theory development outlined above also underscore the more general point that simulation is often critical to the discovery of new theories, even if they are subsequently communicated and justified using conventional mathematical models.

Simulating Possible Futures: Artificial Intelligence

Building on a long history of attempts to engineer mechanistic versions of living organisms, the field of Artificial Intelligence (AI) emerged in the 1950s from the conjecture “that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it” (McCarthy et al. 1955/2006, p. 12). Referring explicitly to simulation in its founding definition, AI seeks to extend the horizon of the possible by not only constructing machines that simulate biological systems like humans, but also new forms of intelligence that don’t exist in nature. For example, chess-playing machines, robotic vacuum cleaners, and self-driving cars. These ambitions force us to confront fundamental questions about the nature of simulation. For example, when does a simulation cease to be simulation but instead an autonomous device to which, potentially, we attribute moral status? More specifically, use of the term simulation in AI typically refers to software agents as opposed to physically instantiated autonomous systems. Most autonomous robots, for instance, are not referred to as simulations. On the other hand, a robot with a navigation system inspired by a desert ant could very well be seen as a simulation of the ant’s navigation system, despite being a physically instantiated autonomous device (Lambrinos et al. 2000). In other words, the *use* of one system to model another system is the defining characteristic of a simulation rather than the particular properties of the substrate used for automation.

Another question raised by AI is the phenomenological status of simulations. Most notably, John Searle (1980) coined the term “strong-AI”

to characterize the assumption that creating a thinking machine is a matter of devising the right program, or equivalently, the right simulation. According to Searle, advocates of strong-AI believe that thought, intentionality, and consciousness are properties of a system that emerge from the algorithm being executed, and independently from the physical nature of the device executing the algorithm. Put simply, a simulation of a mind *is* a mind, and the study of thinking machines can proceed without concern for the physical characteristics of the machinery. Searle proposed a refutation of this proposition with a thought experiment. He imagined himself in a room where he manipulated meaningless symbols according to a set of rules. To the outside world, however, these symbols are Chinese characters, and Searle is answering questions written in Chinese. Searle argued that his responses, like a computer’s responses, could be behaviorally identical to native Chinese speaker yet he, like a computer, would not understand a word of Chinese. Programs manipulate symbols whereas minds attach meaning to them, so thinking machines are more than just programs, and more than just simulations. Searle’s critique of strong-AI was met with a series of counterarguments, many of which he rebutted, but some are still being debated (Cole 2019).

Simulating Possible Presents: The Growth of Social Networks

As well as exploring the unobservable past and potential futures, simulation is equally well suited to understanding the observable present. A familiar feature of the modern world, especially since the advent of World Wide Web, is the role of social networks in influencing human behavior. For example, many people are familiar with the idea that everyone on earth is only six or fewer degrees of separation from the US President. This is one implication of the small world hypothesis explored by the sociologist Stanley Milgram (1967). Milgram was interested in how human social networks tend to be structured as small worlds, in the sense that any two people, however

socially, economically, or geographically distant, are connected by a surprisingly short chain of acquaintances. This is an empirical claim that can be tested, but why might we expect this phenomenon, and how might it be explained?

The work of Watts and Strogatz (1998) helped to resolve these questions by using simulations to model the growth of social networks. Reflecting on this work, Watts (2004) recapitulates in detail how simulation “enabled mathematicians to become experimentalists, testing their theories in a multitude of imaginary laboratories where the rules of reality can be adjusted at will” (p. 77). In particular, through a series of simulations, Watts and Strogatz iteratively simplified their models by investigating how various single parameter models could generate small world networks. For example, their alpha parameter model generated networks by regulating the probability that two people with a mutual friend will become connected in the future. Some regions of this parameter space generated small world networks, while others didn’t. The work of Watts and Strogatz, like the research into language evolution discussed above, neatly illustrates how the methodology of simulation in the sciences has a strong tendency to take phenomena associated with highly complex systems and attempt to recreate the gross properties of these phenomena with the simplest models possible (see ► “Complexity” and ► “Emergence”). As the following examples show, the methodology of simulation can also proceed in the opposite direction.

Simulating Alternative Worlds: Virtual Reality and the Visual Arts

Virtual Reality. A typical simulation will model a system that is distinct from the user and will operate without any human interaction during its execution. The study of Virtual Reality (VR), on the other hand, allows simulations to be experiential, rather than merely observational (see ► “Virtual Reality”). The user interacts with a digital representation of a real or imagined world which can respond to their actions in real-time (see ► “Virtual Reality”). The origins of modern VR

can be found in the work of pioneers such as Morton Heilig (1962) and Ivan Sutherland (1965), culminating in the sophistication and diversity of modern VR systems. These systems immerse the user’s senses in digitally-simulated interactive content via a head-mounted motion-tracked display device. Specifically, VR is a form of simulation where gravity, interactive forces, liquid flow, and even weather systems might be modelled. The use of simulation in VR will tend to value high fidelity visual representations of simulated worlds composed of complex processes, systems, or events, as opposed to the simple, abstract, and transparent representations needed to explain some phenomena of interest, as described in the preceding examples.

Many VR systems are driven by educational goals, and since the 1990s, the idea that first-person experience and nonsymbolic interactions with immersive systems can support the acquisition of knowledge has gained considerable traction (Winn 1993). This experiential and constructivist pedagogical approach to learning drives most educational VR applications (Johnston et al. 2018) (see ► “Possible in Education”). Indeed, VR enables the transformation of abstract ideas into perceptible representations using virtual objects (“reification”) in, say, numerical simulations (Gupta et al. 2019). The visual scalability of virtual objects and environments, to take another example, allows users to explore simulations on a macro and micro scale such as when exploring inside and outside the quantum atom (Kontogeorgiou et al. 2008). In short, the key features of VR, namely, multisensory interaction, invisible interfaces, and technological immersion, contribute to the phenomenon of presence, the psychological sense of “being there” within the digital world, and transforming the users into active participants in the simulation (see ► “Virtual Reality” and ► “Human-Systems Integration”).

The Visual Arts. Just as simulation allows scientists and technologists to create and analyze possible worlds, visual artists have adopted simulation as a means to generate imagery and create digital artifacts (see ► “Imagery” and ► “Illusion in Art”). For example, John Gerard’s *Western Flag* (2017) is a simulation of the now disused

site of the first oil find, in 1901, at Spindletop, Texas. This work generates highly detailed imagery of the original site along with a flagpole emitting simulated pressurized black smoke resembling a flag. The simulation operates in real time, reacts to current weather conditions, and is displayed on giant LED screens. Western Flag has been exhibited in multiple international locations and sizes, and raises issues relating to the invisibility of toxic by-products of the oil industry. In short, Gerard's work underscores how simulation can be used to create real-time and dynamic artifacts, the state of which are regulated by the current physical environment.

Conclusion

All forms of modelling, such as mathematical and statistical models, descriptive models, and physical models, make possible the development and analysis of imagined systems. In what senses are simulations substantially different to these other kinds of model? Simulation affords unique opportunities for discovery when we consider issues of complexity, automation, and computation. Furthermore, simulation raises philosophical issues relating to the difference between simulated and natural systems and the role of humans within these systems.

Simulation and Complexity. Simulation is ideally suited to modelling systems composed of many interacting components that evolve over time in ways that are analytically intractable, or too laborious, to determine by other means (see ► [“Complexity”](#)). The components of a simulated evolutionary system might be genomes in a population, and the components of a simulated immune system might be cells within an organism (Chaudhury et al. 2014; Kitano 2002). Furthermore, the rules determining how these components interact may themselves be complex systems. For example, when modelling language evolution, how the system transitions from one state to the next could be determined by a computational model of language acquisition implemented in thousands of simulated language users (Brighton et al. 2005). Understanding how,

at the scale of a population, such systems evolve over time will often involve modelling many millions of interactions that cannot plausibly be represented or determined with any degree of fidelity using conventional modelling techniques (Bonabeau 2002) (see ► [“Emergence”](#)).

Simulation and Automation. Simulating complex systems requires automation, which almost always refers to the use of computers to represent and calculate how a system evolves from one state to the next. Computers make complex simulations feasible, but also provide an unparalleled freedom to experiment with the initial conditions and the rules that govern the dynamics of a simulation. Many instances of a simulation can be executed concurrently by clusters of high-performance computers, allowing vast spaces of model parameters to be explored with minimal effort. Another advantage of automation is the ability to implement real-time, immersive VR simulations that allow humans to engage with and influence the state of the simulated system. Flight simulators, for instance, model the complex interactions between a simulated aircraft, a simulated environment, and a human actor (see ► [“Virtual Reality”](#), and ► [“Human-Systems Integration”](#)).

Simulation and Computation. What can be simulated using a computer is bounded by what is tractably computable. The nature of the system being simulated, however, may bear little resemblance to the structure and function of digital computers. Analog systems such as the nervous system can be simulated with arbitrarily high precision, as can any physical system traditionally described using the mathematics of continuous functions (Trenholme 1994). Indeed, simulations are often viewed as subcategory of mathematical models. While it is true that any simulation can, ultimately, be specified mathematically, this perspective obscures the fact that simulations can be, and often are, created by modelers who lack the formal knowledge needed to express and analyze models mathematically. Anyone who can design software can design simulations.

Philosophical Issues. When modelling, the aphorism “a map is not the territory” (Korzybski 1958, p. 750) clarifies that the goal of a model is to capture an insightful abstraction rather attempt to

replicate the system being studied. While this goal may drive the practice of modelling in much of scientific inquiry, there is a tendency among some to view simulation as means to replicate systems with high fidelity. Taken to an extreme, some AI researchers are driven by the goal of whole brain emulation, where it becomes possible to replicate a person's mental state in a simulation (Sandberg and Bostrom 2008). This issue is directly related to Searle's Chinese room argument of the preceding discussion, which challenges the idea that mental states are merely computational states. Taken to a further extreme, some researchers have proposed a simulation hypothesis, which conjectures that there is a high probability that we currently exist in simulation (Bostrom 2003) (see ► ["Reality"](#)). However one views such conjectures, they underscore the diversity of goals among those who use simulation, and the technical and philosophical possibilities that simulation has inspired (see ► ["Possible in Philosophy"](#)).

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Social Change

Brady Wagoner^{1,2} and Séamus A. Power³

¹Department of Communication and Psychology,
Centre for Cultural Psychology, Aalborg
University, Aalborg, Denmark

²Bjørknes Høyskole, Oslo, Norway

³University of Copenhagen, Copenhagen,
Denmark

Abstract

Social change describes the transformations of a society in terms of values systems, social organization, and practices. What may appear a radical idea at one moment in history can become a taken-for-granted norm at another. Woman’s suffrage, civil rights, and environmental concern are all powerful twentieth-century examples of this. The same might be said for the normalization of new technologies, such as the Internet, smart phones, and AI. The prototype of dramatic social change is the French revolution, which aimed to create a sharp break with traditional society and socially engineered a new one based on the enlightenment ideals of liberty, equality, and fraternity. Yet its ultimate failure to uphold its values and achieve the strived for society demonstrates some of the inherent limitations to radical social change. Social change often

coincides with, and is driven by the idea of, a possible future society different from the current one – in other words, an awareness of the difference between the actual and the possible opens up. This can happen when we are confronted with other societies’ ways of doing things, a minority that persistently communicates an alternative view of reality, and more specifically social movements’ imaginations of alternative futures and motivation to actualize them. Whether efforts to bring about social change are successful depends on both power and moral vision – if it is effectively communicated and connects up with the public’s values.

Keywords

Social influence · Protest movements · Cultural contact · Arab Spring · Imagination · Moral psychology

Contact Drives Change

One of the most obvious drivers of social change is the contact of groups, especially those with vastly different ideas, values, practices, and technology. Such contact brings to the fore the *possibility* of other modes of believing and acting, as well as material artifacts and technology. The early twentieth-century school of anthropology called *diffusionism* (which included Rivers, Boas, and Bartlett) emphasized how most social changes were caused by the contact of cultures rather than internal developments within them. Ideas, practices, and technologies tended to be taken over by different groups rather than invented anew (see Wagoner 2017). However, in this process the new tends to be combined with the old, such that it is uniquely placed and adapted in each society. Furthermore, genuinely new ideas and practices can emerge from the synthesis of existing cultural forms (Bartlett 1923). This is also visible in new developments in the arts and sciences within the same society (Bartlett 1958).

As a result of these processes societies that are in regular contact with others tend to change at a faster pace. Icelandic language, for example,

changed little over centuries because of its relative isolation from other societies – its modern form is much closer to Old Norse than other Scandinavian languages. At a macrolevel, Jared Diamond (1997) argues that one of the main reasons Columbus sailed to the Americas, and not the reverse, was that the geography of Eurasia provided regular fluid contact between groups, such that innovations in one could easily spread to others. He focuses principally on the diffusion of domesticated plants and animals, technology, and germs, but the principle could just as easily be applied to ideas (he does consider the invention of writing).

The “Colombian exchange” (of plants, animals, and germs) that followed the “discovery” of the Americas also opened up an imaginary world of possibilities. Stories of strange people that tattooed their face and ate human beings flourished, as did people’s consciousness of belonging to a distinct culture among other possibilities (Anderson 1983). Thus, the very contact with other groups can create *reflection* on a group’s own belief system and practices, and in a sense relativize them (Shweder 2017). This can occur by exposure and appropriation of new ideas or practices that develop or even enhance a group. Or, in contrast, it can also lead to reflection based on conflict with, or resistance to, new ideas and practices (Gillespie 2008). In an increasingly globalized world these processes are accelerating (Geertz 2012).

This perspective can also be applied to the interactions between groups in the same society. Great innovators are often great synthesizers across the knowledge bases of different groups. Furthermore, the relationship between scientific groups and the lay public has been identified by Moscovici (2000) as a particularly fertile site for the construction of new ideas. He analyzes how new scientific and technological discoveries are collectively elaborated by the public, enriching everyday language and feeding imagination of new possibilities. Moscovici’s (1976–2009) classic study looked at how psychoanalysis entered the French public and provided new interpretations of everyday behaviors (e.g., repression, Freudian slip, and unconscious), which were nonetheless constructed on the foundation of

existing ideas (e.g., Catholic confession’s “talking cure”). To take another example, Einstein’s theory of relativity has been generative not only for physics but also popular culture and many different fields of thought. In short, contact of groups brings into stark relief the possibility of doing things otherwise and thus opens up culture to new developments and imaginations for the future.

Minority Influence and Social Change

Social change often occurs when people are confronted with an idea that ruptures their taken-for-granted assumptions about the world. Suddenly they become all too aware that things could be different. What was earlier unquestioned becomes simply one *possibility* among others, which can require a cognitive effort to reestablish stability. This happens when one encounters unfamiliar or novel ideas and practices but can also be deliberately employed by a minority in order to change the perspective of a majority. Most psychological research on social influence has a “conformity bias” in that it focuses almost exclusively on how a majority suppresses a minority from publicly expressing their position, thereby sidelining the issue of how the minority can influence the majority, opening up the possibility for social change (Moscovici 1976a). In a famous experiment, Moscovici, Lage, and Naffrechoux (1969) demonstrated that minorities could exert influence on a majority by consistently presenting a different perspective on reality. In their experiment, participants had to call out when colored slides were blue or green. The slides were unambiguously blue to most. However, in the experiment a confederate minority (which were two out of the six in the group) said green, 8% of the real participants began to do so as well.

Minority influence has a deep-seated and private character, in contrast to the public conformity that results from majority influence – in other words, it is about *conversion* rather than *compliance*. Central to this theory is the idea that a minority that communicates with a persistent, consistent, and flexible “behavioral style” creates

a *tension* in people that are following the majority opinion. It causes them to look more closely at the minority's perspective, to try to see the world from their point of view. In other words, it can generate reflection on one's own position as being one among other *possibilities*. This tension becomes a "conversion" through a latent, unconscious process, usually after a "sleepy effect." In this way, even an initial active resistance to an idea – as opposed to simply ignoring or outright dismissing it – can be productive of change. In Moscovici et al.'s (1969) original study, participants that called out green in the trials actually showed a *lesser* shift toward calling out green on a color spectrum when compared to those that did not. This can be explained in that by publicly calling out "green" participants partially released the cognitive tension. Similar processes of intentional influence aimed at social change are often deliberately employed by protest movements.

Protest Movements as Catalysts for Change

One platform on which minorities extend the reach of their communication is through social movements. In particular, protests are a direct way of expressing civil discontent and creating imagery for social change in the form of slogans and pithy formulas. Protests are often triggered by immediate events in the present – comprehended within the collective memory of citizens – but are simultaneously informed by our imaginings of possible futures (Power 2020b). For example, during a recent protest movement in Ireland people protested during a stark economic recovery, following an economic recession, when a discrepancy between their expectations of the future did not align with their subjective reality – a timing that would be predicted by relative deprivation theory (Stouffer et al. 1949; Power et al. 2020).

The protest was proximately triggered by an introduction of a new charge on water which was seen by some members of Irish society to disproportionately impact working-class households. Similar dynamics can be seen in other protest movements, such as a gas tax triggering the

yellow vests movement in France (Jetten et al. 2020; Shultziner and Kornblit 2020). Interviews with Irish protesters revealed they were demonstrating because of the charge on water, which was understood within the cultural and historical context of rising inequalities, but was also firmly grounded in people's imaginings of the future (Power 2018b). Groups of Irish citizens imagined an economic recovery that was relatively equal but this possible world did not manifest which lead to a prolonged social movement and ultimately resulted in the abolishment of the water charge (Power 2018a). One reason for the demonstrable success of this social movement – from the point of view of those who protested – was the prolonged nature of the protest coupled with consistent messages and general widespread support for the clear cause. Another reason is that water acted as a concrete symbol from which to orientate a protest movement (Awad and Wagoner 2018). Moreover, the irony of having to pay for water in a small island, covered in lakes and rivers, where it frequently rains, was not lost on the demonstrators.

Similarly, the Arab Spring was triggered by the self-immolation of the street vendor Mohammad Bouazizi, whose cart and therefore livelihood was confiscated by a corrupt police officer when he would not give a bribe. The story resonated with a wider public that was experiencing economic inequalities, corruption, and a shared imagination of the perennial continuation of these problems (Awad and Wagoner 2020). It set off widespread social movements against a continuation of an unfair, corrupt, and unequal status quo across the Middle East. Its results, however, have been mixed. Tunisia saw some democratic reforms, while a brief period of meaningful democratic change in Egypt was followed by an even harsher dictatorship than before. This can be explained by a discrepancy between the rate of political change being incongruent with deeper levels of psychological change among citizens (Moghaddam and Hendricks 2020). In Syria, the Arab Spring culminated in a civil war between the government and those fractured groups who opposed them. The backing of both sides by international allies plunged the countries into a decade-long conflict,

with scores dead, lives altered, and mass migration of those seeking asylum and refuge. Imaginations of possible futures are not real, but their consequences are (Zittoun and Gillespie 2015). We also see the gap between the *possible* and its actualization here; reaching the possible is by no means inevitable. Following democratic revolutions societies typically fall back into dictatorship, and even established democracies tend to “commit suicide” in the long run to quote John Adams (Moghaddam 2016).

Finally, dystopian imaginings of possible future worlds also motivate protest movements in different domains. This has long been the case with regard to the environmental movement (Harré et al. 1999). The recent youth-led protest movement “#FridaysForFuture” was triggered by activist Greta Thunberg protest outside Swedish parliament who was dismayed against political inaction to mitigate climate change. This environmental movement spread globally. In neighboring Norway, for example, multimethod research with high school demonstrators suggests that a violation of shared visions for these youths’ future motivated protest in the present to enact impactful sociopolitical change to curb disastrous climate change and to preserve their preferred possible future (Haugestad et al. 2021). Like #FridaysForFuture, Extinction Rebellion and Sunrise Movements have also used apocalyptic imagery of the future and story scripts to press for action. Protestors stage “die ins” and other means of enacting dystopian futures to fuel the collective imagination for these impending threats. Like the Irish water tax, these devices help to condense complex and dynamic processes into relatable symbols (Awad and Wagoner 2020).

Problems and Paradoxes of the Possible

The Arab Spring revealed problems and paradoxes with imaginings of possible futures. First, there are as many possible futures as there are people to imagine them. Making manifest possible futures brings into focus issues concerned with power and representation: Who gets to communicate possible worlds? Who has the power to create these

possible worlds? Leaders have long known the destabilizing power of alternative ideas for the future. Retaining control is partly a matter of claiming exclusive rights to a narrative for the future. Second, the Arab Spring focused attention on morality and possible worlds. Imagining possible futures opens up space for how future societies *could* be in a descriptive sense. But how these societies *should* be, from a normative perspective, creates problems and paradoxes as well as possibilities.

Reducing economic inequalities, having fairer and less corrupt societies, and ensuring sustainable environments are worthy goals from a progressive point of view. Complexities arise when one comprehends the moral dilemmas, power dynamics, and resistance to forces advocating for these forms of social change. First, is it morally permissible to break the law to create social change? Second, we know people can protest to create social change, but how do authorities respond to demands for social change (Cornish 2012; Power 2020a)? And third, when certain individuals and social groups achieve social change that benefits them, to what extent do they advocate for social change that benefits others and to what extent do they now maintain the status quo?

Answers to these three questions lie within the moral domain. Moral pluralism – the heterogeneity of normative viewpoints – defines the splintering of possible worlds (Gray 2020). In response to the first question above, based on moral viewpoints, breaking the law is morally permissible if the law is deemed unfair, unjust, or illegitimate. Young Egyptians disobeying government laws to protest against the dictatorship is one example. Second, given moral orientations, Egyptians demonstrated on the street to help create space for, and make manifest, a fairer, more just, and equal Egyptian society congruent with how they think it should be. However, this possible world contrasted sharply with those in power who valued the moral, social, and economic order in which they enjoyed the benefits of power. Egyptian protesters were met with harsh military reprisals when they took to the streets. The conflict can be conceptualized as a clash of moral visions for

possible futures. The manifestation of these moral clashes as an open conflict creates the potential for democratic change and the creation of more inclusive and equal societies because the hegemonic power of dictatorial government is challenged which creates the potential for imagining beyond current regimes and to realize these imaginings.

Finally, once social change has occurred for one group (e.g., a law or policy has been introduced that legitimizes the way of life, or cultural practices of a group, or creates more inclusive, fairer, or more equal societies), whether this group continues to advocate for more social change to extend policies, protections, and possibilities for living the good life for other minorities can also be conceptualized within the moral domain. Achieving social change can fulfill one's moral imagination: Possible future worlds have become realities. But social change can also illustrate the limits of one's moral imagination of the possible. Alternative futures can be seen as impossible and therefore not worth striving for. Social change may be followed by the maintenance of the status quo to protect the fruits of this change rather than advocating for new forms of system challenging behaviors. At this point social changes are well embedded in cultural practices and serve to stabilize social life against further change.

The generation of social change through protest is rife with problems, paradoxes, but also possibilities. Sculpting future worlds is steeped in issues concerned with morality, power, and representation of others. What is considered to be social change to create a more moral society can be considered immoral by another group. If you have a moral view that values globalism, marked by global trade, open borders and the free flow of people, and expansive civil liberties, then you are undoubtedly concerned the populist turn against these in recent years. If you have a moral worldview that values nationalism, then one welcomes these protectionist and conservative policies. The recent populist turn illustrates how democracies such as the USA can slide toward dictatorships (Moghaddam 2019).

Conclusion

Social change can occur through cultural contact, minority influence, and social movements. These processes create space for the possibility of future societies. But social change is not always social progress and the notion of progress itself is inherently bound up with different moral visions. There is no inevitable march toward actualizing the possibilities of Enlightenment values (Shweder 1991). And what is considered social progress from one perspective can be deemed social regression from another perspective. One way to conceptualize these problems of the possible is to comprehend these conflicting divergences through a moral domain. In globalized societies, characterized by cultural and moral splintering, imaginings of how societies could and should be create space for multiple possibilities. However, social change is often, though not exclusively, dictated by those with power and resources to define the narrative trajectories of these possible worlds. Yet despite the complex challenges faced by those striving for more utopian imaginings of current societies, social change can lead to social progress. Democratic, tolerant, sustainable, inclusive, and equitable societies can be developed from mundane to radical social change.

Cross-References

- [Analogy](#)
- [Imagination](#)
- [Possible in Sociology](#)
- [Possible Worlds](#)

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Social Cognitive Conflict

► Socio-cognitive Conflict

Social Entrepreneurship

Ryszard Praszquier¹ and Paige Munnik²

¹Institute for Social Studies, University of Warsaw, Warszawa, Poland

²School of Psychology, University of Buckingham, Buckingham, UK

Abstract

Herein, the concept of social entrepreneurship is introduced and characterized through a discussion of its origins and various definitions. Its pivotal characteristics are depicted, including the role of innovations, entrepreneurial spirit, and specific personality traits. Also discussed are various research results, which posit that social entrepreneurs build social capital while pursuing their novel ideas. This social capital ensures the

indigenous character of the instigated social change process.

This entry provides examples of social entrepreneurship from various countries and continents that address diverse and pressing social problems. It also introduces global institutions promoting social entrepreneurship. Finally, it suggests further research that would be beneficial in this field.

Keywords

Social change · Innovation · New ideas · Creativity · Entrepreneurship · Social capital

Introduction: Defining Social Entrepreneurship

The term social entrepreneurship is relatively new (introduced in the 1980s), although social entrepreneurs have been about, in various fields, since much earlier. In the Victorian era, Elizabeth Fry (1780–1845), a known social reformer, engaged in efforts to reform life in prisons by attempting to raise public awareness of the inhumane conditions within them and by initiating legislation that sought to humanize the treatment of prisoners – particularly females. Octavia Hill (1838–1912), a British social worker, was particularly concerned with the welfare of inhabitants of overpopulated cities, especially London. Thomas John Barnardo (1845–1905), meanwhile, was an Irish philanthropist, as well as one of the founding directors of homes for poor children. Earlier, in the Middle Ages, Doctor Durand de Saint-Pourçain, the French Bishop of Mende, and Philippe de Maizières launched Montes Pietatis, an institution that lent money to the poor without interest, although this institution did receive provisions on loan-based profits. Much earlier, Emperor Ashoka (born in 265 BC), known as Ashoka the Great, brought harmony and unity to India, proclaiming reforms while establishing an empire on the foundation of righteousness, indicating that his primary concerns were his subjects' moral and spiritual welfare and the sanctity of all human life (examples from: Praszkie and Nowak 2012).

Social entrepreneurs – educated or illiterate, regardless of their age or gender and independently of cultural context – address pressing, often intractable social problems and introduce novel, systemic, and durable solutions.

Origins

It is believed that the term *social entrepreneurship* (SEship) was coined in 1980 by William Drayton¹ (Sen 2007), who identified individuals being, on the one hand, committed to solving social problems and, on the other hand, pursuing their ideas with an entrepreneurial aptitude (Praszkie and Nowak 2012). Among the various definitions currently in use (Mair et al. 2006; Mair and Martí 2006), the definition used by Ashoka: Everyone a Changemaker – the organization of social entrepreneurs, founded by William Drayton – is seen as the most comprehensive (Bornstein 2004): Social entrepreneurs are individuals with innovative solutions to society's most pressing social problems.

In this vein, social entrepreneurs are characterized as (Drayton 2002, 2005; Hammonds 2005):

- Being able to generate new ideas to solve critical social problems
- Being creative
- Possessing an entrepreneurial personality
- Having the capability to envision the broad social impact of their ideas
- Having an unquestionable ethical fiber

Additionally, they also (Bornstein 1998):

- Introduce innovative ideas, opening up new possibilities
- Combine down-to-earth realism and visions
- Possess creative and extremely ethical problem-solving abilities
- Demonstrate total commitment to their social change ideas

¹The founding CEO of the global organization Ashoka: Everyone a Changemaker.

Martin and Osberg (2007) proposed a shorter definition; that is, social entrepreneurs are those who:

- Focus their efforts on highly disadvantaged, neglected, or underserved populations
- Aim to generate large-scale, transformational benefits for either a significant segment of society or society at large

Any pressing, intractable social problem can be addressed by social entrepreneurs, for example, aging, unemployment, women's equality, poverty, homelessness, children living on the street, children with special needs, people with disabilities, health, discrimination against minorities, trafficking of women and children, education, energy production and distribution, energy renewal, chemical dependency, sanitation, information and communication technology (ICT) exclusion, environmental concerns, peace and conflict resolution, or rural community development (Praszkier and Nowak 2012).

Ambiguity of Definitions

Due to the vast number of definitions currently in use (Mair et al. 2006), the understanding and importance of the concept of social entrepreneurship differ between people: Some view it as not-for-profit initiatives in search of alternative funding strategies or as management schemes that create social value, while others understand it as a socially responsible practice carried out by commercial businesses engaged in cross-sector partnerships, and yet others see it as a means to alleviate social problems and effect social transformation (Mair and Martí 2006; Dacin et al. 2011). Along these lines, some authors have proposed a more flexible explication of the concept: Social entrepreneurship means creating and pursuing social value through recognizing and exploiting untapped opportunities, accepting higher risk, overcoming limitations, and generating and engaging innovations (Peredo and McLean 2006; Mort et al. 2006).

Some authors have also suggested more comprehensive and/or simplified definitions, for example, that the term social entrepreneurship refers to “the pursuit of sustainable solutions to neglected problems with positive externalities” (Santos 2012), or,

even more simply: “New ideas that work” (Mulgan et al. 2008).

Despite these variations, “new ideas” and “innovation” are commonly seen as pivotal.

The Role of Innovation

The majority of social entrepreneurship definitions are focused on the innovative character of a social entrepreneur's initiative (Alvord et al. 2004; Dees 1998; Drayton 2002; Bornstein 2004; Roper and Cheney 2005; Roberts and Woods 2005; Martin and Osberg 2007). Kramer (2005) stated that the ability to find new ways of doing things is inherent in the definition of social entrepreneurship.

Entrepreneurial Spirit

Another pivotal trait of social entrepreneurs is their individual level of entrepreneurial spirit (Bornstein 2004; Mair and Martí 2006; Nicholls and Cho 2008), especially if viewed as an engine that propels much of the growth of the business sector, or as the driving force behind the rapid expansion of the social sector (Drayton 2004; Austin et al. 2006).

Social entrepreneurs are visionaries, are creative, and have the acumen for implementing their novel ideas in workable and durable systemic solutions (Praszkier and Nowak 2012).

Personality Traits

Social entrepreneurship requires a specific approach from committed people who have specific personality traits (Bornstein 2004; Drayton 2005; Martin and Osberg 2007; Light 2008). Some authors have gone as far as indicating that “social entrepreneurship is not so much about pattern-breaking change, but about pattern-breaking individuals” (Light 2006, pp. 47–48).

Another study showed that social entrepreneurs exhibit statistically significantly higher levels of creativity, risk taking, and need for autonomy than traditional entrepreneurs (Smith et al. 2014).

Comparing personality characteristics (Praszkier et al. 2009) between societal averages (1), social activists (2), and social entrepreneurs

(3), it has been shown that both groups — social entrepreneurs and the leading social activists (i.e., (1) + (2)) — differ significantly from the rest of society (3) in terms of seven specific personality traits:

- They have a higher level of optimism.
- They trust others more than the average person.
- They are more willing to take risks.
- They have wider individual support networks.
- They believe that change is possible.
- They have a propensity for cooperation.
- They have a higher ability to cope with adversity.

Social entrepreneurs (3) differ from social activists (2) in two dimensions:

- They have a higher readiness for risk taking.
- They have a much deeper belief that “things can certainly change.”

Some critics have cautioned, however, that “there is a cult of personality that focuses on individual traits such as achievement, motivation, tolerance for ambiguity, optimism, intelligence, talent, and so forth,” drawing attention away from “real” capabilities such as an “ability to sell an idea” (Light 2006, p. 48).

Examples of Social Entrepreneurship

Below are some examples of social entrepreneurs (from: Praszquier et al. 2010; Praszquier and Nowak 2012; Praszquier 2015).

David Kuria, Kenya

For years, the critical issue in the Kibera slum, which is the biggest slum in Nairobi (home to 800,000 people) and the second biggest in Africa after Soweto, was sanitation. With no toilets, human waste was packed into plastic bags and thrown directly into the streets. Top-down solutions failed (e.g., the efforts of UNICEF), as they violated both the taboos and the prejudices of the local people. Subsequent similar solutions resulted in growing resistance, eliciting a “they want to impose things on us against our will” response.

David Kuria,² an architecture alumnus, joined the community, which ultimately allowed him to develop a deeper understanding of the beliefs and habits of the local people. As both an architect (by profession) and a social entrepreneur (by spirit), he fostered many small group discussions, during which members of the groups drew illustrations of how they envisioned a public toilet “of their own.” This process helped to engage the community and led to identifying the power of bottom-up group activities. From all of the drawings, David Kuria put together a realistic architectural design and, in a group gathering, asked people if they wanted to build their dream toilet.

The response was enthusiastic, and after raising some seed money and through volunteer work from community members, David Kuria facilitated building the first toilet (in 2003). As an outstanding clean point, it featured a variety of add-on services, such as shoe and boot polishing, a soda machine, and a cafeteria; meanwhile, one wall was reserved for advertising. Additionally, the design allowed human waste to be transformed into bio-gas, which, in turn, could then be used by the local women to cook. Soon, the cleaning and shining of the toilets became the community’s social focal point. This very quickly became a topic of interest for the media, who began covering stories of Kenyan VIPs having their shoes polished during a visit, for example. Later, the community members decided to impose a fee for the use of their toilets and showers, including a one-month family discount rate. Off the back of this, these facilities quickly became trendy, ultimately making the local people proud of their community and triggering many other business initiatives, thereby highlighting the positive impact of David Kuria’s project in terms of strengthening and empowering the social capacity of the community.

After building the first three toilets in the Kibera slum, which proved hugely successful in terms of improving both the hygiene and the dignity of the residents, David Kuria is now focusing

²See: <https://www.ashoka.org/en-us/fellow/david-kuria>, accessed 13 April 2021.

on replicating these facilities in various other slums around Kenya and beyond.

Dr. Yehudah Paz, Israel

Dr. Yehudah Paz,³ a social entrepreneur, is currently in the process of building islands of peace in the Middle East – a place where the basic currency of cross-ethnic relationships is distrust.⁴ Dr. Paz's core conviction is centered on mere conflict resolution not being enough, because peace leaves an unexpected void that people used to war very often find difficult to bear, especially if they are unable to perceive any other prospects. Based on this philosophy, he engages leaders from opposed groups in profitable joint ventures. Through cooperating in these ventures, Jews and Arabs are able to experience the great benefits that ensue from joining forces.

Peace imbued with new prospects results from this joint venture process, based on trust and success. Not only have new enterprises begun to blossom, but the empowerment of Arab women has quickly become a secondary effect; for instance, they have found themselves at the forefront of establishing new economic opportunities for both their families and their community at large. The structure of Dr. Paz's organization reflects the joint Israeli–Arab approach, which is jointly led by Arab and Israeli women, both of whom not only seed new concepts, but also serve as a model for change. By building bubbles of trust and cooperation, Dr. Paz is also preventing the potential outbreak of dormant conflicts between the two communities.

Dr. Paz's efforts began in the Negev Desert, involving Bedouins, Arabs, and Israelis, and are beginning to take root across the entire Middle East, as well as in Sri Lanka, Kenya, China, and South Africa. He calls his approach “integrated development,” combining trust, cooperation, and economic growth with education and orientation toward peace, yielding a widespread ripple effect,

which led to his characterization of the phenomenon as an “exponential spread.”

Krzysztof Czyżewski, Poland

Cross-ethnic, –religious, and –cultural conflicts impede economic development and fuel poverty in many places around the world that, in a feedback loop, accelerate conflict. Krzysztof Czyżewski, a social entrepreneur from Poland,⁵ demonstrated that using various small, community-based initiatives, rather than attempting to tackle an issue head on (e.g., through lecturing or patronizing society members), to address and overcome deeply ingrained cross-border and –religious prejudices can be far more effective. On the Polish–Lithuanian–Belarus border, which was previously considered an economically disadvantaged area, potential conflicts began to brew, with each group blaming the other for ongoing setbacks. Operating in this area, Krzysztof Czyżewski focused on restoring its historical roots by encouraging the local children to publish a chronicle and publicizing their efforts to collect and exhibit old photographs and postcards, as well as by tracing the area's multi-ethnic history. As a result, the region's historic Catholic, Jewish, Orthodox, and Protestant roots were rescued from the brink of obscurity and spread widely throughout the local communities.

Other initiatives involve teaching cross-cultural music lessons and traditional crafts, where young people are able to discuss the history and meaning of various traditions. Moreover, local youth, previously considered troublemakers and in conflict with mainstream society, are now engaged in efforts to revive indigenous Jewish folk music and they play in a Klezmer orchestra that performs both nationally and internationally. By transforming the perceptions and roles of young people within communities scarred by historical divides, Krzysztof Czyżewski is beginning to create a new vision for the future. This particular brand of entrepreneurship highlights the ability of small initiatives to accumulate

³ See: <https://www.ashoka.org/en-us/fellow/yehudah-paz>, accessed 13 April 2021.

⁴ See: <http://www.nisped.org.il/>, accessed 13 April 2021.

⁵ See: <https://www.ashoka.org/en-us/fellow/krzysztof-czyzewski>, accessed 13 April 2021.

and foster a shift in the collective mindset of a community, thereby eventually engendering social and economic development. This approach has been instrumental in preventing potential outbreaks of underlying cross-ethnic conflicts.

Asad Danish, Afghanistan

Asad Danish,⁶ operating in the Afghanistan Pashto tribal belt, is bringing about harmony and education through publishing and disseminating resources to illiterate people via the radio. He is mostly recognized for his publishing house, Danish Publication Association, which translates books, encyclopedias, and magazines into Pashto and then prints and disseminates them.

The foundation of Asad Danish's idea for social innovation is the creation of educational hubs based in small-town libraries in Afghanistan (mostly located in schools for girls and boys); he created the concept of the "dynamic librarian," enhancing the role of librarians and empowering them to create, host, or develop reading circles to promote education in local communities. To provide educational resources on various levels, Asad Danish's Danish Publication Association donates diverse books and magazines to these libraries. Moreover, he is in the process of establishing an FM channel that broadcasts local news and promotes Afghan culture and literature.

Through this approach, Asad Danish is building bubbles of harmony and peace, especially around "dynamic libraries," as people are gathering, reading, exchanging thoughts, and learning about other cultures. However, the impact goes far beyond education, such as promoting peace, understanding of other cultures, and tolerance.

Wannakanok Pohitaedaoh, Thailand

Wannakanok Pohitaedaoh,⁷ from Thailand's unrestful region of the Deep South, which frequently faces attacks from Muslim terrorists, became preoccupied with the ever growing number of orphans and child victims, often

traumatized after witnessing family members being killed. She was especially concerned about the lasting disempowerment and marginalization of victimized children, even if they had been taken care of.

When contemplating the root causes, she focused particularly on bringing peace to the region, paying special attention to the fact that external peace-building and conflict resolution initiatives (downward causation) are usually short-lived or even fail. Wannakanok Pohitaedaoh's overarching belief was that peace should be borne from within a community, rather than outside of it, and she decided that to achieve this, it was important to empower the orphans of the region to become a strong taskforce aimed at campaigning for peace and civic engagement. In this sense, the Deep South's predominantly Muslim community would no longer be passive, suffering such atrocities in silence.

This insight created in her enormous energy to empower and train these children, ultimately turning them into peace and civic engagement ambassadors. The biggest question, however, was around how this could be achieved, for which the answer was simple: Those who had experienced similar events should visit schools to share their stories and/or victimized families to share experiences and support, which would not only be cathartic for them, but would also inspire the next generation. Additionally, both publishing and disseminating their objectives could help to raise awareness.

Following this, Wannakanok Pohitaedaoh's next insight was that without strong civic engagement to combat terrorism, peace might not be achievable or sustainable. Thus, her idea was to engage and support young ex-victims in participating in communal and social problem solving, thereby establishing a civic engagement paradigm and demonstrating that power is found in a peace-oriented majority, not in terrorism. This idea proved successful in terms of seeing young people taking action to resolve many issues, such as solving local conflicts, participating in local elections, and helping to build local wells and roads. In this sense, these young people became community role models, particularly through their ability

⁶See: <https://www.ashoka.org/en-us/fellow/asad-danish>, accessed 13 April 2021.

⁷See: <https://www.ashoka.org/en-us/fellow/wannakanok-pohitaedaoh>, accessed 13 April 2021.

to instigate and instill civic activity (building an alternative attractor). Ultimately, the cumulative effect was the emergence of social capital, thereby both engaging and empowering the community to fight terrorism, which often meant standing up to their own neighbors. This type of bottom-up dynamic peace process is not only durable, but is also sustainable as it is supported by endogenous social capital.

Wannakanok Pohitaedaoh was able to trigger a bottom-up movement (upward causations) with multiple lower-level interactions based on minimal financial investment; this resulted in the emergence of social capital and a peace process on a higher level. By facilitating this process, Wannakanok Pohitaedaoh's aim was to provide power to others from behind the scenes (i.e., the absence of controller). Her intention was not to push or pull people or to influence their actions, nor did she want to attract fans or followers based on her charisma; instead, she wanted an autocatalytic process that benefited from the leverage points that she was able to build up.

Social Entrepreneurs Build Social Capital

As discussed, Wannakanok engaged in building social capital, which supported her mission. It has been documented (Praszkier et al. 2009; Zabłocka and Praszkier 2012) that social entrepreneurs are able to empower individuals, groups, and societies, alongside the pursuit of their social mission, through building trust and propensity for cooperation, that is, social capital (Bourdieu 1986; Coleman 1990; Putnam 1993, 2000).

Social capital refers to an important asset developed by a person's family, friends, and/or associates and is something that can be relied on in a crisis or enjoyed for its own sake (Woolcock and Narayan 2000). This asset is based on cooperation between the members of a society, a family, or a peer group (Bourdieu 2003).

Social capital provides important value both for individuals (Coleman 1988; Brehm and Rahn 1997; Burt 1997, 2001; Adler and Kwon 2002) and groups or societies (Woolcock and Narayan 2000; Fine 2001; Praszkier et al. 2009). Moreover,

many authors have highlighted its importance for community development and economic growth (Putnam 1993; Neace 1999; Maskell 2000; Fukuyama 2001).

Social capital supports and transforms a social entrepreneur's initial idea into an indigenous process, in which groups and communities identify and take co-responsibility for pursuing change (Praszkier and Nowak 2012).⁸ Additionally, social capital helps make the most difficult challenges achievable (Coleman 2000; Putnam and Gross 2002).

Promoting Social Entrepreneurship

Ashoka: Everyone a Changemaker

The creator of the concept of social entrepreneurship, William Drayton,⁹ is also the founding CEO (in 1980) of the organization Ashoka: Everyone a Changemaker,^{10,11} which is "pioneering the field and identifying and supporting the world's leading social entrepreneurs."¹² During its first 20 years, Ashoka selected, for its Fellowship, more than 3700 social entrepreneurs across more than 90 countries.¹³

"Ashoka has built and nurtured the largest network of leading social entrepreneurs in the world. After a rigorous selection process, individuals are introduced to a life-long fellowship, where every member is committed to championing new patterns of social good".

"Support provided for Ashoka Fellows include:

⁸ Along these lines, an evaluation tool was developed, measuring the propensity for building social capital (Zabłocka et al. 2016).

⁹ See: https://en.wikipedia.org/wiki/Bill_Drayton, accessed 13 April 2021.

¹⁰ See: <https://www.ashoka.org/en-us>, accessed 13 April 2021.

¹¹ See: [https://en.wikipedia.org/wiki/Ashoka_\(non-profit_organization\)](https://en.wikipedia.org/wiki/Ashoka_(non-profit_organization)), accessed 13 April 2021.

¹² See: <https://www.ashoka.org/en-us/focus/social-entrepreneurship>, accessed 13 April 2021.

¹³ See: <https://www.ashoka.org/en-us/ashokas-impact-snapshot>, accessed 13 April 2021.

- A tailored stipend for up to three years, if needed, for the Fellow to dedicate themselves full time to the advancement of their idea;
- Customized engagement opportunities that accelerate their impact;
- Increased visibility;
- A global community of peers.”¹⁴

According to an Ashoka longitudinal survey, 92% of Fellows reported that the Ashoka stipend helped them focus on their idea full time. They also reported collaborating or partnering with at least four other Ashoka Fellows after being selected. This is possible through the Ashoka global network, which encourages Fellows to apply their work at a systems change level.

Schwab Foundation for Social Entrepreneurship

In 1998, Hilde (Chair) and Klaus Schwab founded the Schwab Foundation for Social Entrepreneurship,¹⁵ which has supported over 300 social entrepreneurs (as of 2018) to improve the lives of more than 622 million people across 190 countries.¹⁶

Summary and Conclusions

The field of social entrepreneurship is relatively new. As it intersects numerous domains, such as social innovation, nonprofit management, and entrepreneurial studies (Dacin et al. 2011), there is an ongoing debate over the definition and specific traits of social entrepreneurs, as well as over the methods to evaluate their impact.

The before-cited examples illustrate the significance of the innovations of social entrepreneurs, especially in the fields of peace-making, conflict mitigation, education in disenfranchised areas, and sanitation. When there occurs multiple pressing social problems, social entrepreneurs bring

systemic solutions to combating hunger, paving the way for equality, implementing renewal energy, preventing dependencies, etc.¹⁷

Social entrepreneurs occur everywhere, regardless of the conditions or context, such as high in the Himalaya Mountains (e.g., Lucky Chhetri from Nepal, empowering and educating girls from high Himalayan villages to become trekking guides¹⁸), among nomadic African tribes (e.g., Dennis Ole Sonkoi from Tanzania, bringing economic growth to Maasai people, based on their indigenous culture¹⁹), and in the poorest Latin American regions (e.g., Olga Bocarejo from Colombia, developing waste banks where children and youth receive food and nutrition in return for collected waste²⁰), as well as in the developed part of the world (e.g., Dr. Frank Hoffman from Germany, who introduced a solution for the early identification of the smallest nucleuses of breast cancer, through training visually impaired women, whose sense of touch is much higher than the average²¹). Common for social entrepreneurs is the use of imagination, which enables the establishment of possible, though previously unnoticeable, solutions (see: Glăveanu 2018).

The aforementioned finding, that social entrepreneurs pursue their innovative ideas through building social capital, indicates that they do not act single-handedly; on the contrary, they inspire groups and networks through creativity, empathy, and cooperation.

Social entrepreneurship seems an important contribution to solving pressing social problems and, as such, is worth further study. The key concepts to be explored include identifying specific approaches used by social entrepreneurs, how they enlist key local players and turn their

¹⁴ See: <https://www.ashoka.org/en-us/program/ashoka-fellowship>, accessed 13 April 2021.

¹⁵ See: <https://www.schwabfound.org/>, accessed 13 April 2021.

¹⁶ See: <https://www.schwabfound.org/what-is-the-impact>, accessed 13 April 2021.

¹⁷ See, for example: <https://www.ashoka.org/en-us/collection/leading-social-entrepreneurs>, accessed 13 April 2021.

¹⁸ See: <https://www.ashoka.org/en-us/fellow/lucky-chhetri>, accessed 13 April 2021.

¹⁹ See: <https://www.ashoka.org/en-us/fellow/dennis-ole-sonkoi>, accessed 13 April 2021.

²⁰ See: <https://www.ashoka.org/en-us/fellow/olga-yaneth-bocarejo-buitrago>, accessed 13 April 2021.

²¹ See: <https://www.ashoka.org/en-us/fellow/frank-hoffmann>, accessed 13 April 2021.

ideas into workable and indigenously supported change vehicles, the kind of social influence they introduce, and the variables that provide social change dynamics-based durability and irreversibility, to name but a few. These findings may be useful for training future leaders and changemakers.

Cross-References

- Creativity
- Empowerment
- Entrepreneurship
- Innovation
- Intelligence
- Risk
- Social Change

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Socio-cognitive Conflict

Anne-Nelly Perret-Clermont

University of Neuchâtel, Neuchâtel, Switzerland

Abstract

The term “socio-cognitive conflict” has been coined to label a cognitive conflict experienced by two persons here and now and resolved socially, that is, a dynamic process that is elicited when different (initially incompatible) points of view have to be coordinated in order to find a solution that is acceptable for all partners (Doise et al.: *European Journal of Social Psychology*, 5(3), 367–383: 1975; Mugny et al.: *Bulletin de psychologie*, 321(29), 199–204: 1976). This coordination might be silent but most often takes the form of gazes, gestures, joint actions, verbal exchanges, or argumentation. Of course, the conflict is not always perceived as such nor is it always happily solved. This requires joint attention to a common object, mutual respect, and a “thinking space” sufficiently secure (emotionally, relationally, institutionally, and culturally) for the growing child, or for the adult learner, to dare explore alternative views while still preserving basic identity needs. Empirically studying socio-cognitive conflict is a way to observe the emergence (the genetic moment of “rising”) of a given, momentary (and, under certain circumstances, soon to be stable), new “possible”. It calls attention to the transformative and inventive (not only reproductive) experiences of knowledge

construction: it is possible to learn even without an expert on board. It opens the way to educational designs developing the skill to confront, reflect, and imagine alternative possible worlds.

Keywords

Socio-cognitive conflict · Perspective taking · Thinking · Development · Learning · Conceptual knowledge · Social interactions · Dialogue · Intersubjectivity · Cooperation

Synonyms

Conflict of centrations; Conflict of perspectives; Social cognitive conflict.

Introduction

Inspired by both Piagetian developmental psychology and social psychology, initial investigations on socio-cognitive conflicts were first conducted in children, opening a field of investigation known as “genetic social psychology” (Psaltis & Zapiti, 2014). Its first findings (see Perret-Clermont, 1980; Mugny et al., 1981; Doise & Mugny, 1984) concerned mainly the impact of such confrontations on the cognitive development of the individual partners. They evidenced that the need to (try to) reach a joint agreement necessitates and gives rise to an integration of the different views in a new cognitive organization at the collective and the individual level. In Piagetian terms, this meant that socio-cognitive conflicts were observed to be occasions for the children involved to move to a more advanced operatory stage, because of the cognitive restructuration that the *here-and-now* encounter with a dissenting peer had required.

This fact established that further research looked into the conditions under which socio-cognitive conflicts in children and adults are likely to occur and then on how they are solved with or without cognitive gains. As research developed,

in the laboratory and in the field, with varying methodologies, the discussion extended to different levels of analysis in order to account for the communication processes involved; the construction of the intersubjectivity between the interlocutors (not only peers but also experimenters gaining the research status of interlocutors); and the role of institutional settings, social representations, norms, and signs in framing the thinking spaces and the conversation modes.

Beyond the implications for psychology, educationalists (in schools and in vocational training) have been interested in the meaning of these findings to design activities that offer participants opportunities not only to learn about already established knowledge, but also to develop as creative thinkers exploring new ideas and (co-)constructing their minds. In such a perspective, children and adults (including researchers) are not only adapting to the world (and to knowledge) as it is (or seems to be), but they are also developing the possibility of confronting, reflecting, and imagining alternative perspectives, alternative possible worlds (Iannaccone et al., 2019).

Opening the Possible in Terms of Cognitive Growth

The concept of socio-cognitive conflict describes moments during which thinking is an activity that is simultaneously social and cognitive, open ended, and susceptible to leading to reasonable resolutions. Socio-cognitive conflicts can lead to learning gains not explainable in terms of imitation, tutoring, or social influence: hence, they allow for a type of learning that is a matter not only of appropriating existing knowledge but also of creating new understandings. This prevents learners from being reduced to the status of targets of transmissive actions via an asymmetrical power game. They are now observed as (co-) authors of their own development and engaged in making sense of their social and material world in order to transform it or to adapt to it.

What happens when two people have conflicting views on a precise matter and, not

withstanding that they are both convinced of their standpoints, they nevertheless accept to respect and explore the others' perspectives (see perspective taking) in order to establish if they can make a decision based on a shared understanding? Such a process does not necessarily presuppose that one is "right" and the other "wrong", nor that each one has a part of the "truth" and that a mere addition of their perspectives will lead to the solution. It is simply an open situation of unexpected cognitive conflict that obliges each interactant to become aware that a different perspective on the same common issue exists, embodied, here and now, in another person. When a common decision is needed and the emotional situation is safe, it encourages the interlocutors to make efforts to decenter from their own perspective. The fact of having to acknowledge this divergence without having to comply to the other's opinion opens *possibilities* for thinking because it leads the interlocutors into questioning (openly or silently) their premises: Why is the interlocutor saying this? Why is one partner not understanding what the other is saying? Isn't it evident? Is it possible to defend and coordinate these varied views and arguments to move beyond the dissonance that they create? Of course, on the way, the partners in the discussion might discover that they do not share common ground. But this will appear only if there is a socio-cognitive conflict that raises the issue.

The cognitive process elicited thereby is a complex one. It is dynamical, requiring distance from one's initial position in order to place it in a larger scenery that includes the other's position. This opens the possibility of creating new perspectives; it is a social and dialogical process. It requires open-ended (and sometimes partly implicit) argumentation based on the presupposition that a possible common answer is probably not known yet and has to be constructed and defended.

"Each possible is the result of an event that has produced an 'opening' within itself i.e., a 'new possible', that in turn, if actualized, will create new 'openings' on other possibilities" (Piaget, 1976, p. 282, our translation). What might be

confusing in Piaget's approach is his (over)-emphasis on the logical side of actions, tasks, and interpersonal coordination. But his inspiration can be useful in conducting minute descriptions of logical reasoning in interaction and in particular in conflictual intellectual interactions (Schwarz et al., 2008). They shed a new light on the interdigitation of social, cognitive, and emotional processes and on how they weave the material and symbolic context that they are part of (Grossen, 2001).

Genesis of the Concept of Socio-cognitive Conflict

Why was this concept proposed? In the 1970s, in schools, in academia, and in politics, the debate was hot between proponents of different types of explanations of why learning was (un)happily affected by social processes. The most widespread expectation of teachers was that they had to present proper models to their students, who would then learn by imitating (or memorizing) them adequately. The transmissive model was predominant, with a static understanding of what knowledge is and a prescriptive view of teaching. Most teachers had no experience of how knowledge is produced. Social class differences in school failure were reported by sociologists and known by the public. They were commonly interpreted as "socio-cultural handicaps" (whatever this meant). Some years later, these social representations of intelligence, learning, and teaching became an object of research (Gilly, 1980; Mugny & Carugati, 1989).

Academic empirical research already had a century of experience addressing issues of intelligence, learning, and development in different languages. But in the general context of the Cold War, the different theoretical lines developed in the East and the West tended to ignore each other. In Geneva, a younger generation was eager to recover this multidimensional heritage and debate, reading Piaget, Mead, Wallon, and the first available translations of Vygotsky. They had urged Piaget to create a chair of social psychology.

He had invited Serge Moscovici, Claude Flament, and then Willem Doise. It is in this very specific context that a new line of empirical investigations started in Geneva, concerned with the role of *socio-cognitive* conflicts in the development of the mind.

The notion of “conflict” is central to explain development in Piaget’s theory. Bärbel Inhelder was launching innovative research projects in order to provide descriptions of how children face cognitive conflicts in various activities and learn from this “micro-genetic” experience (Inhelder et al., 1992). She was careful to distinguish the two types of conflict and of learning. In type 1, there is tension between what is expected and what happens: children (because of their action scheme or representation or hypothesis) have an expectation that is partially or totally contradicted by their observations; this creates a disequilibrium, a kind of intellectual dissatisfaction. In type 2, children are experiencing two contradictory expectations because of two different schemes (or hypotheses) that are opposing each other. A very puzzling situation. The concept of “socio-cognitive conflict” was then introduced to draw attention to the social dimension of these conflicts: the cognitive contradiction experienced by the children usually takes place during a joint activity or a conversation. If they interiorize this social experience, they can reflect on it. Hence, it is central to investigate the role of the alter in such situations. Smedslund (1966) made the case that “conflicts of communication” played a key role in development. Empirical studies were needed to exemplify Smedslund’s assertions and to examine under which conditions the alter did not need to necessarily be a more expert person but could be a peer who is just as ignorant (see ignorance). This was the task of the first experimental studies of socio-cognitive conflicts. Later on, Kohler (2020) will describe the complexity of these socio-conflicts that occur often simultaneously on different planes and in interdigitated ways, for instance, when students, among themselves or with a teacher, discuss a problem in physics: they hold different perspectives, past experience, semiotic resources, motivations, intentions, and goals.

Research on Socio-cognitive Conflicts and Developmental Gains

The concept of “socio-cognitive conflict” has been used in quite a variety of lines of research, ranging from mere replication (or contradiction) of the initial results to raising fundamental questions in psychology, for instance: the difference between knowledge and social representations; the role of cognitive processes in social influence; the distinction between the psychological versus the epistemological subject; emotions and identity (Rijsman, 2004) as part takers in these socio-cognitive processes; asymmetric relations as limits to shared thinking. The concept of socio-cognitive conflict has also inspired innovations in educational design, in particular in cooperative activities (Roselli, 2000; Buchs, 2004), including computer-supported collaborative tasks aimed at learning through participation in argumentative conversations (Schwarz & Baker, 2017). In no way is it sufficient to just put children together to work around a task and see them progress. Due to a lack of space, the profound transformations that the educational strategy needs to undergo in order to take seriously into account the learners’ perspectives within the complexity of real field situations will not be addressed here (but see, for instance, Barth, 1994; Perret & Perret-Clermont, 2011; Kohler, 2020).

The proponents of the concept of “socio-cognitive conflict” had first to establish that socio-cognitive conflicts were observable and could be studied. Then, empirical research was needed to verify that the expected cognitive gains were developmental, that is, pertain to “deep learning” (operatory change) and are not mere repetition of expressions heard, imitation, or compliance. This was done starting with a four-step paradigm (pretest, interaction or control phase, post-test 1, post-test 2), inviting children to solve, alone or together, various problems in different experimental conditions. The two post-tests, generally conducted a week and then a month later, allowed a follow-up of the effect of the interaction in terms of learning gains and to assess their solidity. Perret-Clermont (1980) also used these post-tests to observe how the newly

developed concepts generalized to other tasks. This has evidenced a change of “structure” (as Piaget calls it) of the child’s mind, that is, a move from the initial stage of development (pre-operational) to the next one (operational). This was important because of the on-going debates around the distinctions between *surface learning* (retrieving information on the physical and social world and on one’s own actions, gained via observation or transmission from others) versus *deep learning* (developing internal operatory structures that organize the mind); adopting an *opinion* versus *constructing a concept*; expressing *one’s own understanding* versus *complying to the expectations* of a social demand. Piaget touched on this in the introduction to his 1929 book but had never investigated empirically the dialogical and methodological dilemmas that he highlighted there. This will be done in further development of the research around socio-cognitive conflicts (Sinclair-Harding et al., 2013).

In order to have a chance to video-record socio-cognitive conflicts, experimental situations were carefully designed with an effort to optimize the chances to generate such conflicts and their positive resolution thanks to a meaningful task with a common goal requesting a joint decision (e.g., a fair sharing of juice, the joint reconstruction of a village, etc.): children who didn’t know each other previously and, as a consequence, had no image of the partner’s “intellectual authority”; peers with different views according to the pretest but developmentally not too far apart in order to be able to understand each other; and a welcoming atmosphere (closer to play than to schoolwork). The positive results obtained with this initial design led to a systematical examination of the factors affecting progress after socio-cognitive conflicts.

Even a more advanced peer is likely to make developmental gains due to an interaction with a less advanced partner. This was the most striking result in the first generation of studies. Intermediate subjects are shown to progress even when they have been confronted with a non-conserver. Furthermore, in settings that offer different viewpoints (e.g., sitting at different places in the village task), children tend to have different

perceptions and progress even when they are similarly incompetent (Carugati et al., 1979). The incompatibility of their responses requires them to think differently. This finding was soon meticulously replicated by Ames & Murray (1982), and this process further investigated by others at different ages (e.g., Schwarz et al., 2000). Vertical relationships with authority figures are likely to induce the child into giving priority to the management of the asymmetry via obedience or compliance. Horizontal relationships – such as Piaget’s claim – are more likely to allow the child to focus on the task and its logics, and peer interactions are then more likely to support cognitive development. But experimental results report that being an adult does not make it impossible to have proper potentially fruitful socio-cognitive conflicts with children: this happens when an adult, in a not too “awkward” manner (Lévy & Grossen, 1991), gently contradicts the children’s assertions while helping them to maintain their attention centered on the cognitive issue (and not on an implicit power game). The beneficial social interaction does not require well-conducted explanations or sophisticated verbal productions. It does not even require a solution to be found on the spot. Being puzzled is essential. And this sets different socio-cognitive strategies on the move (Gilly et al., 2001; Laux et al., 2008).

Another set of results concerned children from disadvantaged backgrounds. Different studies, among which Coll Salvador et al. (1974), had shown that, even on Piagetian tests, at a given age, they are more likely to perform poorly in the pretest. This was replicated in the socio-cognitive conflict studies but only for the pretests because the amount of progress evidenced after the socio-cognitive conflict is such that finally, in the post-tests, their rate of success is similar to the children of more advantaged origin (Perret-Clermont, 1980; Mugny et al., 1981). This “recovery” is all the more remarkable considering that the phase of social interaction lasted only 8–15 minutes. Similar findings were found when comparing rural versus urban children (Nicolet, 1995) or boys and girls (Perret-Clermont & Schubauer-Leoni, 1981). In this last study, fine-grained analyses were conducted to understand

what was happening during the pretest that could account for these inter-group differences. They evidenced that middle-class children are more likely than the others to progress already during the pretest. Hence, pretests are not neutral. To middle-class subjects who remain centered on the cognitive issue (not being too intrigued by the social meaning of the adult's conduct or fearful of his judgment), they offer potential socio-cognitive conflicts via the adult's questioning (Lévy & Grossen, 1991). From there on, the classical four phases paradigm will be reconsidered as offering four events to the children forming a designed "experimental micro-history" (Perret-Clermont & Schubauer-Leoni, 1981; Tartas et al., 2016): the type of interpersonal relationship experienced during a phase affects the possibilities of the next phase not only because of the learning gains, but also via the transfer of social scripts, emotions, and interpersonal attitudes.

How Is the Socio-cognitive Conflict Resolved?

The replications and variations of these studies concerned, among others, the characteristics of the tasks including the norms and emotions related to them (Doise & Mugny, 1984; Nicolet, 1995); the institutional contexts (Iannaccone & Perret-Clermont, 1993); the material and social sources of feedback (Schwarz & Linchevski, 2007); the narratives justifying the action (Light & Perret-Clermont, 1989); and the social representations (Psaltis & Zapiti, 2014). These so-called "independent variables" are in fact dependent on how the participants interpretate the situation and their role and identity. This meaning-making activity will (or not) allow them to identify a conflict and engage in different strategies to solve it. A cognitive restructuring of the issue is not the only possible outcome, some social solution might be privileged (Sommet et al., 2014; Butera et al., 2019): children are alternatively likely to be overall concerned by being polite, honoring a friendship bond, saving face, winning what they (wrongly) perceive as a competitive game, or defending the (supposed)

prerogatives of their gender position. Researchers (and teachers) are quite likely to miss the fact that what the children are trying to manage is often not what they expect.

Conclusion

In education, as Grossen (2008) remarks: emphasis is often "put on mutuality, sharing, negotiation of a joint perspective or shared meaning, coordination, intersubjectivity, etc. All these aspects are indeed fundamental in communication processes but it should not lead us to ignore the fact that communicative processes are made up of convergences and divergences between the interlocutors, and that tensions (or conflicts) are part of any conversational dynamics" (p.248). Not only intra-mental processes are at work but also interpersonal ones. Facing disagreements in a constructive way creates new horizons for the thinkers. The concept of "socio-cognitive conflict" has called attention to the possibility that these tensions open for cognitive growth.

Research has explored the multiple conditions that must be fulfilled for socio-cognitive conflict to lead to better cognition. They concern the care to be taken in order to construct a "thinking space" (Perret-Clermont, 2015) sufficiently secure (emotionally, relationally, institutionally, and culturally) for the growing child, or for the adult learner, to dare explore alternative views while still preserving basic identity needs. The art of creating such thinking spaces awaits more contributions from educators, mediators (Greco, 2020), diplomats, and artists. Yazgi & Sandoz (2021)'s present participative theater play is a nice example of an invitation to decenter in order to invent possible solutions to tensions.

Cross-References

- [Emotion](#)
- [Goal Orientations](#)
- [Here and now](#)
- [Ignorance](#)
- [Intelligence](#)

- Norms
- Perspective
- Perspective-Taking

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Sociological Imagination

► American Pragmatism

Space: Astronauts and Creativity

Henderika (Herie) de Vries
Yale University, New Haven, CT, USA

Abstract

Humans venturing into space require maybe more creativity and imagination, than any other human endeavor before. Creativity and space are inextricably linked. However, space has rarely been explored within the research domain of creativity. This entry presents a background of current knowledge for this possible future domain of research. On the one hand there is the existing connection of space and creativity, and on the other hand there are findings on human performance in space, which point to possibilities for research. Outer space represents an extreme human environment where creative thinking might sometimes be needed for survival. In contrast with general creativity research, space psychologists investigate human factors not in an optimal, but in an extreme environment. How does

human behavior and performance in extreme environments relate to creative potential and performance? Future answers to this central question will give insight into how to foster creative thinking also in extreme situations on Earth. Possibilities of future research directions are discussed.

Keywords

Creativity · Space psychology · Astronaut/cosmonaut · Environment

Introduction

Exploration of the universe was inspired by imagination long before humans flew into space. The space industry recognized from the beginning the role of creativity. Imagination in early science fiction stories inspired and served the development of space science before this was even technologically possible. A famous example is Jules Verne's "De la terre à la Lune" (French for "From the Earth to the Moon") (1866), which was translated to almost 100 languages from French. Another example is "Die Frau im Monde" (German for "The Girl in the Moon") authored by Thea Von Harbou (1929) who also consulted German rocket scientists for technical advice on accuracy.

Mathematics teacher and rocket scientist Tsiolkovski (1903) invented the rocket equation, which is a mathematical proof that a rocket can reach outer space. This "father of Russian space-flight" mentioned: "At first, we inevitably have an idea, a fantasy, a fairy tale, and then come scientific calculations." (in Siddiqi 2010, p. 16).

Creativity was seen as central in building the space industry. A US newspaper called a first NASA space object and communication satellite the "Echo balloon" (1960): "The visible symbol of American creativity for all the world to see" (p. 18, in Hansen 1995). It followed the first Russian satellite ("Sputnik," 1957).

More recently, former NASA administrator Mile Griffith, recognized that there are "real reasons" and official "acceptable reasons" to go to

space. Although official reasons involve the economy, policy rationales, military, scientific knowledge, and possible benefits for society, the real reasons that humans venture into space are curiosity, challenge and adventure, exploration and discovery, knowledge and inspiration.

There has been little attention within the research domain of creativity for space or other extreme environments (de Vries 2018, 2019). Creativity researchers naturally focus on optimal social, physical, and societal environments to foster creativity (Amabile 2013; Dul 2019; Harrington 2020), with exceptions (e.g., Simonton 2020). Possibly there were also practical reasons that "space" has not received much attention until now. To fund research on the psychological factors contributing to the creative performance of space travelers, an interest from the space industry for psychological research is also needed.

Although creativity was acknowledged in the USA as important for the space industry, for psychological science this was less so. This is best demonstrated by psychological selection criteria at the beginning of space flight. In the USA, astronauts simply had to demonstrate they had "the Right Stuff," of which courage and bravery were the main factors (Wolfe 1979). Flight crew of later missions were assessed on psychological concepts of "instrumentalism" and "expressiveness" and divided into categories with the "right stuff," "wrong stuff," and "no stuff" (Chidester et al. 1991; Santy 1994). Today selection is a more sophisticated process, and includes women with the "right stuff" as well (Weitekamp 2004).

The US space industry showed overall little interest in integrating psychology with astronautics, in spite of attempts from psychologists themselves (e.g., Smith and Altman 1961; Helmreich 1983). Psychology was at the time predominantly associated with psychotherapy and mental illness. The costly space industry needed to consider public relation effects to secure financial government support, and potential psychological problems could be interpreted as weakness and not project an image of strength (Harrison and Fiedler 2011). Psychological issues also represented a risk for disqualification for individual astronauts for future missions.

The culture surrounding the emergence of cosmonautics in Russia, the other “space nation” at the time, did allow for a natural integration of psychology at the service of spaceflight from the beginning (Petrov et al. 1979). For example, the Soviet head of space medicine mentioned already in 1980 that if there are limitations for humans in space, these are psychological, not medical (Vakoch 2011). According to space psychologist Vakoch, it was the joint cooperation of NASA of the USA and ROSCOSMOS of Russia with the cooperation of the Shuttle-Mir in 1993, and later the ISS missions, which spurred the incorporation of psychological knowledge for space.

But in contrast again with the USA, however, where creativity research evolved rapidly from the 1950s onward, in Russia there was less focus on creativity research related to psychological factors. Now that it is almost 60 years ago that the first human (Yuri Gagarin) flew into space, and the space community focuses on the journey ahead to Mars and beyond, creativity research related to space has become imminent (de Vries 2019). A reason for this is that deep space missions are characterized by specific and additional psychological challenges (Stepanova et al. 2003). The further into space human missions go, the more creativity-related skills will be needed to survive and thrive.

One possible challenge, for example, is the fact that the Earth will be seen as only a very small dot from Mars, if seen at all, and there is no possibility of direct communication with Earth and mission control, because of an up to 20-min delay in communication each way. It is unknown today what psychological effects this will have on the mental well-being of space travelers. Therefore, creativity skills, which are also related to well-being (Postareff et al. 2017) become increasingly important. To guarantee well-being on a Mars settlement, Russian space psychologists today recommend creative skills as selection criteria for future space travelers (Sal’nitakiĭ et al. 2003). This need is emphasized because of a shift of professional astronauts and cosmonauts to a diverse population of space travelers who will also settle on the Moon and Mars. While this entry is being written, a joint collaborative

mission of SpaceX and NASA, “Crew Dragon,” is flying the first two commercial astronauts to the ISS. Although the crew really consists of two experienced astronauts, future space travelers will be less trained and selected for optimal performance. Thus, insight into creative potential in outer space is needed, and it represents a gap in research.

A central question regarding understanding the relation between creative performance and the extreme environment of space is how the space environment relates to, and maybe alters, psychological factors which are related to creative potential. The next sections will first address the general domain of creativity and space and will be followed by a section on psychological factors regarding space travelers. Then, existing literature indicating possibilities of investigating altered creative performance, and recently suggested approaches for this new domain are presented. The overall aim is to integrate outer space and broaden the research domain of creativity.

Possibilities of Research: “Upstream,” “Midstream,” and “Downstream”

The first official space art piece is an aluminum statue of the “Fallen Astronaut” by artist Paul van Hoeidonck and resides since 1971 on the Moon. Space art is an elaborate field with a long history (e.g., Dougherty and James 1993; Malina 1991; Welch 2018). Malina subdivided art and space into domains such as “art about space,” “art sent to space,” “art created in space,” and “applied art.” The space industry regards the use of art as a powerful tool, and it acknowledges the importance of fostering the space industry.

Examples are the flourishing art programs of national space agencies in the USA (NASA) (Dean and Ulrich 2008), Europe (ESA), and Japan (JAXA). The importance of creativity for space was also reflected in the “NASA Institute for Advanced Concepts” (NIAC, 1988–2007). This institute provided an independent source from innovators, which impacted NASA’s missions, to develop new aeronautical and space concepts and encourage an atmosphere of creativity

and foster scientific innovation. Innovation remains central to investigate visionary far-reaching advanced concepts. For example, a recent book by the Innovation Director of NASA concerns artificial intelligence of the future (Hatamleh and Tilesch 2020). Further, there are art institutes such as “KOSMICA” (2011), which highlights in particular the intercultural, and interdisciplinary aspects of space.

Another way space is involved with the domain of creativity is through the field of primary and higher education. The study group “STEAM for Space” (2016) of the International Academy of Astronautics (IAA) is an example of a movement to support and encourage through space the fostering of creativity and art for science, technology, engineering, and mathematics.

Thus, space inspires creativity in the science of education, but it can inspire scientific creativity in all science research disciplines. The intercultural and international environment of the space industry represents an interesting context regarding creativity research. Furthermore, the interdisciplinary character of all space-related activities represents an advantage because it is known that this fosters creative thinking (Repko and Szostak 2020). The International Space University (Strasbourg, France), for example, integrates the following courses: Engineering, Space Applications, Human Performance in Space, Space Humanities, Management and Business, Space Policy, Economics and Law, and Space Sciences (Astronomy, Astrophysics, and Cosmology).

The science discipline this entry focuses on is creative human performance.

Creativity can be defined as: “The production of ideas that are not only novel – different from previous ideas in some way – but also appropriate: useful, valuable, correct, or somehow fitting to the purpose that the individual creator intends.” (Amabile 2018, p. 1). As Sternberg and Kaufman (2018) mention, creativity was for a long time thought of as ineffable, to be understood by examples of artists such as musicians, painters, or writers. But today, creativity is also researched scientifically as a psychological construct where it is regarded as a skill which can be learned,

assessed, and measured (e.g., Lubart et al. 2013; Barbot et al. 2016).

When we use a space analogy, endless possibilities appear to explore creativity and space. In the space industry activities are categorized into upstream, midstream, and downstream activities (PWC 2019). The upstream industry represents all objects sent into space, such as launching rockets. The midstream industry concerns all operations supporting both upstream and downstream aspects. A gateway, for example, serves to explore further into deep space, but also to return to earth. The downstream sector uses upstream and midstream products for all kinds of applications serving earth, such as climate change and public health (Space Safety Magazine 2014).

Taking this analogy further, research on space and creativity could evolve from an earth and reality bound (downstream), to a more abstract theoretical (midstream) and finally theoretical universe, which transcends time, space, reality, and existence (upstream). This means that all empirical research into the psychology of space and creativity for applications on earth would be called a “downstream” activity. A “midstream” approach represents theoretical support for applied research, which is however also embedded in larger philosophical ideas. The “upstream” activity concerns broader philosophical ideas. An “upstream” example is the theory on the dynamic nature of creativity (Corazza 2016).

Concerning “downstream” research, there are many gaps of knowledge regarding space- and creativity-related skills and only a few researchers touched upon this subject (King 1997; Schlacht et al. 2010; Kanas et al. 2011; Peldszus et al. 2014; de Vries 2018, 2019). White (2014) mentions general alterations of perception during a space mission. This includes altered perception of space, time, silence, and weightlessness. Within the multivariate theory of creativity (Sternberg and Lubart 1995) known psychological factors contributing to creative potential are personality traits such as “openness to experience,” conative factors such as “tolerance of ambiguity and uncertainty,” affect (emotions and moods), “motivation” and “risk taking,” knowledge (memory, attention, cognitive processes), and the

environment (context and culture). These factors might contribute (or impede) in different ways creative performance in space. To investigate this, first more understanding is needed of implications of the extreme environment of space on psychological factors and cognition. The following section describes this field of space psychologists.

Space Psychology

Space psychology is concerned with the well-being of space crews to optimally accomplish missions. A large part of the space industry consists of engineering, and this technological perspective is reflected in space life sciences as well. The human body and mind are sometimes viewed as “a very successful technical engineering project that is hard to replicate, and of which the detailed engineering specifications are not yet fully known.” (Damann 2009). To live and work in space, this human machine needs a specific environment, food, water, rest, and also mental health. The means of support for optimal accomplishment of missions are training, mitigation of risks, monitoring, mentoring, and developing countermeasures. A distinction is made between physical and mental requirements for: (1) suborbital, (2) orbital, and (3) planetary exploration crews (Clément 2011; Petersen et al. 2016). For the suborbital crew, the focus is on choosing humans who can mainly physically survive the particularly high acceleration during reentry, and those who can bear motion sickness. The orbital flight missions require additional selection criteria because of a range of physical alterations: e.g., bone loss, muscle atrophy, cardiovascular deconditioning, and disturbances of the vestibular system, causing misorientation. For this crew, there are also mental, or psychological, requirements because of the longer confinement and isolation. Finally, planetary exploration, like a settlement on Mars, requires extensive psychological criteria for crew selection, including creative skills, besides addressing health hazards (for an overview see Afshinnekoo et al. 2020).

Most astronauts and cosmonauts experience even on short flights “space fog,” a general term for cognitive issues, like difficulty of concentration, attention and memory, and slowing in general mental and motor functioning. What are the specific stressors causing psychological alterations? Before the effects of stressors are researched, they are identified and categorized. Space psychologist Kanas (2015) for example, divides known stressors into a (1) Physical stressors (periods of high acceleration, microgravity, ionizing radiation, meteoroid impacts, light-dark cycles, vibration, ambient noise, low and high temperature, diminished lighting, no air or poor air quality, psychological, interpersonal, and psychophysiological nature), (2) Psychological stressors (isolation and confinement, life-threatening danger, periods of monotony and high workload, time effects, personality and crewmember-selection issues, too much free time, increased autonomy, dependence on machines and local resources), (3) Interpersonal stressors (group size, limited social contacts and novelty, group heterogeneity, common language, cultural differences, governance structure, leadership roles), and (4) Psychophysiological stressors (sleep loss and changes in sleep patterns, disruptions in circadian rhythm, impairments in time sense, increased auditory and visual perceptual sensitivity, disturbances in spatial orientation, attention lapses, confusion, memory problems, psychomotor problems).

Others, such as biologist Whitely and Bogatyreva (2018) propose to systematically investigate possible human factors with their model of “7 protective shells and the environment,” where they combined insights from engineering and psychology.

The effects known today of psychological stressors vary from euphoria caused by microgravity to depression from living in a confined environment far away from home, neurosis, sharpening and accentuation of negative personality traits, effects of fatigue such as emotional instability, and psychosomatic dysfunction. Cognitive effects are, for example, diminished psychomotor, dual-task, tracking and fine-manual performance, as well as sleep-related impacts on alertness, response times, and ability to focus (for

an overview see Morpew 2001), and research is ongoing.

Current research on human performance concerns, for example, team selection (Maschke et al. 2011), conflict resolution, teamwork in confined spaces (Landon et al. 2018), communication with mission control (Gushin et al. 2016), circadian rhythm and human performance during space flights (Flynn-Evans et al. 2016), and studies investigating long-term postflight effects of values (Suedfeld et al. 2012). Other examples are human-machine interactions, eye tracking research, and thermal comfort (e.g., aircraft cabin, train).

The main and unanswered questions are how these altered human factors in space relate to creative performance. Interestingly, studies conducted in relation with creativity overlap issues studied in space. Examples are research on the relation between creativity and the circadian rhythm (e.g., Jun et al. 2019), teamwork and creativity (e.g., Reiter-Palmon 2017), eye-tracking and creativity (Agnoli et al. 2015), mood and creativity (e.g., Baas et al. 2008), and virtual reality (e.g., Guegan et al. 2017). It seems only a small step for creativity researchers to connect knowledge of creativity on earth to creativity in outer space.

In their excellent work, Russian space psychologist Sal'nitakiĭ and colleagues identified consequences of specific psychological challenges related to new expected stressors for a Mars mission. In their article written in Russian, they describe known psychological challenges caused by physical stressors, technical issues, and new possible stressors. The five new stressors are (1) transformation of the sociopsychological needs of the crew in an unpredictable direction, (2) sustained conflict tension in the crew, (3) an acute mental disorder in one of the crew members, (4) refusal of activity, and (5) difficulties of crew communication with representatives of ground services.

They also describe "mental asthenization." This is a condition based on increased fatigue, quick exhaustion of nervous processes, a decrease in the ability to prolong intellectual stress, not found in astronauts and therefore representing a

cultural difference in emotions (Kanas 2015). Cultural differences (Boyd et al. 2009) and emotions in space are rarely researched and represent a direction within this new domain.

Overall, there are many unknowns if the next goal of living in space with complete physical, mental, and social wellbeing is possible. The next section highlights some existing findings of research which indicates that creative potential might indeed be altered in the outer space environment. Finally, recent publications are mentioned of proposed models to study creative performance in space.

Space Psychology and Creativity

Will astronauts and cosmonauts in the future be selected, assessed, and trained for creative potential, as Russian psychologists suggest (Sal'nitakiĭ et al. 2003)? If this is indeed the future, it is relevant to investigate what are the unknown effects of the extreme environment on creative potential. Findings of existing studies give indications for future research.

A study by Suedfeld and Weiszbeck (2004) showed that astronauts and cosmonauts view the personal value of self-direction (Schwartz and Bardi 2001) as the third most important from 11 values. Self-direction is related to creativity. Research further shows that space missions can alter personal values and motivation. Suedfeld and Weiszbeck also found that for some early astronauts, the value of self-direction decreased during the mission, but after the mission it increased to a higher level than before the mission. A study from a simulation Mars mission by Sandal et al. (2011), with six analogue astronauts confirms the tendency that self-direction decreases during the mission. The authors also found that there was no indication of groupthink, but rather that values were related with the formation of groups. Group dynamics might therefore be different in space (Landon et al. 2018), and this raises the question if this also influences group creativity (e.g., Reiter-Palmon et al. 2012).

Does the extreme environment interact with other factors contributing to creative potential,

such as personality, or emotions? There are studies touching on this topic of salutogenesis or personal growth (Ritsher et al. 2007). Space psychologist Suedfeld et al. (2012) asked 20 cosmonauts, and as a control group new mothers, and a group of trauma survivors, to fill out a 21-item Post Experience Change Inventory. This Inventory is an adaptation of the Post-Traumatic Growth Inventory (PTGI) (Tedeschi and Calhoun 1996). The cosmonaut group scored significantly higher on the item “new possibilities” area of personal growth than the other two groups, after the mission. Although this is not a creativity measure, it could relate to an alteration in creative cognition as well. In again another study on personal growth, researchers (Ihle et al. 2006) found an interesting distinction in two groups of astronauts and cosmonauts. Participants (39) filled out 36 items of a questionnaire, the “Positive Effects of Being in Space” (PEBS) Questionnaire. This was again an “adapted for space version” of the PTGI. They found significant differences between a high- and low-change group. The high-change, and more reactive group, ranked higher for “excitement of perceptions of space” such as “a sense of wonder about the universe, space exploration, and appreciation of boundlessness of the cosmos.” The low-change, or low reactive group, ranked higher for changes involving their inner life. This group reported “a new appreciation of life,” “changing priorities,” and “a better appreciation of each day.” This finding is interesting considering that a main predictor of creativity is the personality trait of “openness to experience” (e.g., Dollinger et al. 2004). It represents a sensitivity toward fantasy, feelings, aesthetics, ideas, actions, and values (McCrae 1987), and as Eldesouky (2012) noted, all facets of openness can involve an inner and outer environment.

A common way to assess creative potential is to assess fluency and originality of divergent thinking. However, it is unknown how divergent thinking relates to differences in inner and outer facets of openness to experience. Research with space travelers might therefore offer new insights.

More cognitive changes are observed in astronauts and cosmonauts. An example is the experience the “Overview effect” (White 2014): “A

cognitive shift in awareness reported by some astronauts and cosmonauts during spaceflight, often while viewing the Earth from orbit, . . . the experience often transforms astronaut’s perspective on the planet and humanity’s place in the universe. . . Some common aspects of it are a feeling of awe for the planet, a profound understanding of the interconnection of all life, and a renewed sense of responsibility for taking care of the environment.” (p. 2). There is currently no knowledge of whether this transformative experience in space is connected to measurable cognitive changes related to creative potential. A recent study with an analogue “overview effect” on earth, the Space Buzz, did find indications of a cognitive effect for children (van Limpt-Broers et al. 2020).

Overall, the existing studies indicate that space might both impede and enhance creative potential. The overview effect could be related to developing a higher level of creative potential as does research on values in space. However, the condition of “space fog” might again inhibit creativity. Future research measuring creativity of astronauts before, during, and after space flight will shine light on and fill the “creativity and space” research gap.

Creativity researchers are starting to become interested in this new domain of creativity (de Vries et al. 2019), and propose theoretical models. Referring to the categorization earlier, these are midstream theories. Examples are Bourgeois-Bougrine’s (2020) theoretical model to investigate creativity in safety-critical environments, and the “Space art taxonomy model” of Hays et al. (2020), which distinguishes two dimensions of space art. One dimension is where the art is created, and the other where it is experienced. Another “midstream” model is the “Expansive Multiverse Framework” of creativity (de Vries *in review*), relating new sensorial experiences with a broadening of cognitive and emotional “universes” and creative potential.

An example of how “upstream” theories are related to “midstream” theoretical approaches is the application of the (upstream) “Dynamic creativity framework” theory (Corazza 2016) to (midstream) scientific missions (Corazza and Lubart

2020). Their Space-Time continuum model is built on the “Cultural Actuation Model” of creativity, a developmental model, which predicts more or less originality and fluency in divergent thinking, based on cultural differences in tolerance of ambiguity and other values (de Vries 2018).

Overall, there are many research gaps, or rather an unknown number of possibilities, related to open questions related to “downstream,” “midstream,” and “upstream” approaches, to explore in the future.

Summary

This entry covers a nascent domain of research.

Within the constraint of science on space and creativity, possible future domains of research emerge, which can be categorized in “upstream,” “midstream,” and “downstream” directions. Philosophical explorations surpassing boundaries of time and existence correspond to an “upstream” infinite realm. Theoretical “space” models supporting both philosophical and more practical applications are of a “midstream” nature. The subject as elaborated in this entry is an example of a “downstream” approach. However, a downstream application also forms the basis of the upstream and midstream research and in this sense, there is a circular and infiniteness as well to the quest for knowledge.

It was mentioned that a link already existed between creativity and space before humans flew into space. This is also reflected through the history and industry of spaceflight. Space psychologists identified stressors on humans during space missions to guarantee optimal mission accomplishment and the well-being of astronauts and cosmonauts. Specifically, Russian space psychologists recognized early on the importance of creative skills, also for long-duration missions.

It was suggested that changed psychological factors, which are known to be related to creativity on Earth and part of a multivariate theory of creativity, could be related differently to creative performance in space, as studies of space psychologists indicate. Examples are changed personal values, the overview effect, and salutogenesis.

With knowledge available on psychological factors of space and of creative potential, we can explore possible new dynamics of creative performance in space.

Insights into this new domain can serve training and selection practically, and help human space missions succeed. Creativity research in the extreme human environment of space also benefits the research domain of creativity, as it might even broaden the concept of creativity itself. An “upstream” idea is that scientific concepts such as creativity are bound by human understanding of nature (de Vries 2018). Maybe all our inquiries therefore ultimately serve humanity.

Or, in line with philosophers such as Nietzsche (1968) and as stated by Dr. Franco Malherba, the first Italian astronaut: “Man will never refuse the experience of travelling beyond the Pillars of Hercules to explore other worlds, as part of an endless quest to find himself.” (ESA 2015, p. 25).

Cross-References

- Curiosity
- Divergent Thinking
- Openness to Experience
- Tolerance of Ambiguity

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Speculation

Arran Gare
Philosophy and Cultural Inquiry, Swinburne
University, Melbourne, VIC, Australia

Abstract

“Speculation” originally meant “reflective observation.” It came to mean “conjecture” or “mere conjecture” as philosophers strove for certainty, consecrating science as rigorously acquired knowledge accumulated through application of the scientific method, and devalued the cognitive status of other discourses. The present conventional meaning of

speculation, where the place of observation has disappeared, is a by-product of this consecration. In this entry I show how, through efforts to defend the status of these other discourses, the original meaning of “speculation” was not only revived but built upon by speculative philosophers. They showed that speculation is primordial to all experience and thinking, with past speculations embodied in language as “dead” metaphors. Revealing the possibility of elaborating alternative metaphors frees us from not only these dead metaphors to overcome the dead ends of current science, opening up new possibilities for enquiry, but the possibility of reconceiving ourselves and our place in nature. In this way, speculation makes it possible to transform ourselves, creating radically new ways of living and new forms of life. On this view, speculation, by opening new possibilities, could free us from the destructive trajectories of current civilization.

Keywords

Speculation · Scientism · Dialectics · Metaphors

Historical Context

Currently, “speculation” is taken to mean conjecturing without conclusive evidence, or the activity of proposing possible answers to questions based on limited knowledge or information. Tacitly, speculation is counterposed to knowledge based on practical experience, rigorous observation, or rigorous reasoning and is defined as inferior to these and not to be taken seriously. This everyday usage can be regarded as common sense, but it has not come to us through the evolution of common-sense. It is the product of a long history of philosophical disputes ramifying through the entire culture of Western civilization. The current meaning of “speculation” is inextricably linked to other concepts that also have gained their current meaning through equally long histories of philosophical disputes. The concepts of evidence, knowledge, and information are obvious examples. The word “speculation”

has its origins in the Latin *speculum* which meant mirror, reflection, and reflective consciousness and late Latin *speculationem* which meant contemplation or observation with the root *spek* coming from the proto-Indian-European, meaning “to observe.” So, originally “speculation” meant “reflective observation.” According to the Oxford English Dictionary (Speculation 1989), the original English word meant “To look or gaze at (something); to examine, inspect, or observe closely or narrowly” or “To observe or view mentally; to consider, examine, or reflect upon with close attention; to contemplate; to theorize upon.” In the mid-fifteenth century, “speculation” was taken to mean the pursuit of the truth by means of thinking, or thinking or meditating on a subject. Evidently, the place accorded to observation in speculation gradually dropped out. It was only later that “conjecture” became central to the concept and only from the late sixteenth century that speculation gained its disparaging sense of “mere conjecture.”

This disparaging sense gained momentum with the seventeenth-century scientific revolution and the quest for absolute foundations for knowledge and absolute certainty, whether through reason associated with mathematics, deductive thinking modelled on mathematical reasoning, or on what is immediately given to the senses. Most importantly, this revolution was associated with the differentiation of scientific knowledge from all other kinds of knowledge. This claim for scientific knowledge was consolidated in the nineteenth century through Auguste Comte’s positivism and in the twentieth century through logical empiricism and, more specifically, logical positivism. Logical empiricism was founded on empiricism and the newly developed symbolic logic and effort to provide absolute foundations for mathematics either through logic or through precisely defined formal rules of manipulation of symbols. Certainty could be achieved through a combination of induction and deduction. What was seen to be most important in theories is that they generated predictions that could be verified. Science was seen to advance by the development of more general theories able to deduce more particular theories as special cases, implying a deterministic

universe. The successful application of science to technology was a further way of validating scientific knowledge. While logical positivism has been severely critiqued in philosophy, it retains its hold on culture as justifying “scientism,” the belief that only science gives us real knowledge. Rather than sense experience or observational statements, it is common now to think that knowledge is certain because it is grounded in data, or information, allowing some role to conjectures in developing knowledge, provided these are not merely speculative and conform to measurements or statistical analysis of data. It is in this context that the pejorative sense of speculation has gained the status of “common sense.”

Such scientism has always faced opposition. The first major challenge to this conception of knowledge came from Giambattista Vico. Vico was proposing a New Science, characterized as “Speculative Geometry of the Civil World,” but essentially, he was upholding and greatly advancing the humanities and the traditions of rhetoric and history. Arguing that we can know the truths of geometry because we ourselves created it, he argued that the human world can be understood in its historical development because we created it. Because we did not create nature, we cannot really understand it.

Philosophers in Germany offered the strongest defense of speculation, however. Kant was their main point of departure. Like Vico, Kant argued that we can truly understand only that which we ourselves have created, with mathematics taken as a model for this. However, Kant also argued that all we experience is in some sense our creation, produced by synthetic thinking involving imagination, forms of intuition (space and time), and the categories of the understanding. What we observe is guided by questions formulated in terms of these concepts. Kant’s critical philosophy aimed to defend such conceptual knowledge, along with the principles of practical reason and aesthetic judgments of taste. This was neither analytic nor empirical knowledge, but *synthetic a priori* knowledge. Such knowledge would seem to require some form of speculative imagination to account for it. In *Critique of Pure Reason* (1996, A635f. and B663f., p. 612), Kant considered but

rejected this, characterizing speculation as a fruitless theoretical exercise in which cognition aims at an object, or concepts of an object, of which one cannot gain any experience. He invoked dialectics, but merely to show that it is impossible to choose between rival doctrines on issues central to traditional speculative philosophy.

This provoked a reaction, and it was through this reaction that speculation came to be strongly defended. Typically, G.W.F. Hegel defended speculative philosophy through dialectics. Dialectics as conceived by Hegel, under the influence of both Kant and Plato, has a negative side, as the way to expose one-sidedness of abstract propositions of understanding and how these necessarily veer into their opposites. Speculative philosophy was defended by Hegel (1975, §81, p. 115ff.) as the “positive” or speculative side of dialectics. It is the process of overcoming contradiction, one-sidedness, and differences to achieve more comprehensive knowledge, including self-knowledge. In the Preface to his *Phenomenology of Spirit* (1977, §61, p. 38), Hegel examined the claim to be able to ground knowledge on a foundation of sense-certainty, revealing this claim to be one-sidedness, leading through successively less one-sided “solutions” to the conclusion that “knowledge” cannot be treated in abstraction from self-understanding achieved through world-history. Building on the Socratic question that allows us to bring any aspect of experience before the mind and consider its being and meaning, he introduced the notion of the “speculative sentence.” While the Socratic question makes the mind dialectical, allowing it to move from one question to another, the speculative sentence, as interpreted by Donald Verene (2009, p. ix), “turns this series back on itself, revealing its pattern of self-development.” As Verene noted (p. x), “speculation excludes neither reflection nor analysis” but is the “logic of question and answer that is the key to philosophy, far more than argument. Anyone can argue, but few can ask the right questions.” While reflection and argument operate at a distance from the object, “[t]o speculate . . . is . . . to narrate the inner life of the object” (p. 3). As a speculative philosopher, Hegel was concerned to provide a systematic and comprehensive

understanding of human existence and its place in the cosmos, encompassing the natural sciences, history, literature, and art and revealing the possibility for freedom in how we live and organize society.

Hegel defended a form of Idealism, claiming that nature itself is a product of Spirit. Our knowledge of nature only reveals Spirit in nature. Idealism was common to many other philosophers opposing scientism. Subsequently, most philosophers abandoned Idealism, and along with it, speculative philosophy, and its quest for comprehensive understanding. Philosophy was then riven by the opposition between those with a primary allegiance to science conceived of as having found the way to acquire certain knowledge of reality, as with most analytic philosophers, or to the humanities often sympathetic to some form of Idealism. This opposition did not exhaust the traditions of philosophy, however. Other traditions, including most Marxists, pragmatists, and many phenomenologists, extolled practical knowledge over speculation. In some cases, these philosophers aligned themselves with science, as with orthodox Marxists, and in others, with the humanities, as with humanist Marxists, hermeneutic philosophers, and ordinary language philosophers. Either way, these philosophers also tended to dismiss speculative philosophy. The combination of scientism with the privileging of action over speculation led to the identification of knowledge with techno-science and the assumption that all true knowledge shows us how to control the world, including people, more efficiently. The only possibilities for the future are those which will be delivered by technology.

However, some speculative philosophers embraced naturalism, although often without being recognized for doing so. This was the case with Friedrich Schelling who explicitly rejected Idealism. They can best be characterized as speculative naturalists, upholding the ambitions of speculative philosophy and the conception of humans as essentially creative as defended by speculative Idealists while holding that nature preceded humanity and humanity emerged and evolved as participants in a creative nature. Aligning themselves with the humanities, they

challenged the characterization of science by its rationalist and empiricist defenders and their claims that science achieves indubitable knowledge and, following from this, challenged prevailing scientific theories. Embracing Kant's argument that all our knowledge of the world is organized by imagination and concepts, but rejecting his claim to have shown that only one set of concepts are coherent and thereby valid, they argued that existing concepts could be transcended. Attacking Newtonian science, for making sentient life and mind unintelligible, Schelling outlined a speculative physics that could replace Newtonian physics, revealing new possibilities for science that had a major influence on subsequent developments in physics, chemistry, and biology (Gare 2011).

Speculative naturalism was later revived and advanced by C.S. Peirce, Henri Bergson, and Alfred North Whitehead and their followers. Whitehead launched a particularly strong defense of speculative philosophy or metaphysics. While this tradition of speculative naturalism was eclipsed by logical empiricism and phenomenology within mainstream philosophy, and later by structuralism and poststructuralism, the ideas of these philosophers were kept alive among philosophers of science and sympathetic scientists. In demolishing logical positivism in the third quarter of the twentieth century, philosophers of science further developed their arguments, showing the central role for speculation in science itself. This again aligned science with the humanities and, along with granting a place to speculation in science, also gave a place to speculation in transforming humanity and creating the future. As with Schelling, these philosophers provided the means to defend the ideas of Vico and the speculative Idealists on naturalistic foundations. It is this tradition of philosophy that provides a real challenge to the denigration of speculation, and it is through their work that what is speculation can be characterized and defended and shown to be central to science as well as the humanities and everyday, practical life. Work in speculative philosophy or metaphysics has also been strongly supported within the natural sciences by theoretical scientists striving to overcome the heritage of

Newtonian science and its implicit assumptions and the failures of more recent physics. Such work has helped inspire what has been called the speculative turn in recent philosophy associated with speculative realism, speculative materialism, and speculative naturalism, with a revived interest in Schelling (Bryant et al. 2011; Gare 2011).

What Is Speculation

It is in the context of the original meaning of speculation, the change of meaning associated with the quest for certain knowledge, and then the reaction to this by speculative philosophers that its nature and significance can be understood. To begin with, the tendency to exclude observation from the meaning of speculation and then defining it as being in some way inferior to observation should be rejected. Speculation begins in reflective observation. Later efforts to revive and defend speculation have revealed new dimensions to such reflective observation.

Speculation potentially brings everything into question, beginning with appearances and beliefs, methods of inquiry and knowledge of methods for acquiring and ascertaining claims to knowledge, and, more fundamentally, the concepts which define domains for investigation and conceptions of subjects able to speculate. Speculation is not necessarily philosophical speculation; however, reflective observation challenges one-sided thinking and, if pursued long enough, almost inevitably leads to speculative metaphysics, or to sympathy for it. Whitehead (1933) characterized philosophy itself as "an attitude of mind towards doctrines ignorantly entertained" and in defending speculative philosophy argued:

No science can be more secure than the unconscious metaphysics which tacitly it presupposes. The individual thing is necessarily a modification of its environment, and cannot be understood in disjunction. All reasoning, apart from some metaphysical reference, is vicious. Thus the Certainties of Science are a delusion. They are hedged around with unexplored limitations. Our handling of scientific doctrines is controlled by the diffused metaphysical concepts of our epoch. Even so, we are continually led into errors of expectation. Also, whenever some

new mode of observational experience is obtained the old doctrines crumble into a fog of inaccuracies. (p. 154)

Disparaging speculation involves denial of this, claiming that there is an indubitable ground or method underpinning knowledge that is beyond questioning. Speculation in its broadest sense brings into question all claims to certainty and is radically opposed to such dogmatism, including dogmatic skepticism.

That is, for the defenders of speculative philosophy, speculation is not separate from other realms of discourse that can achieve certainty, let alone an inferior discourse. All discourses are based on assumptions that are questionable. Speculative thinking acknowledges this explicitly, not only about itself but also about other discourses and activities. Speculative philosophy is not self-contained but exists through constantly engaging with other discourses, activities, and forms of life and brings the assumptions of these into question, revealing the possibility of replacing them. Particular issues or entities can be focused on, but by the very nature of this must lead to questioning of the boundaries defining these issues or entities. Questioning inevitably leads to the crossing of disciplinary boundaries and then to philosophy in its original sense as love of wisdom, associated with the quest for a comprehensive understanding of the cosmos in all its complexity and our place within it. Beyond questioning, speculative philosophy proposes new ways of conceiving the world, providing new insights, opening up new avenues of inquiry, new research programs, new projects for action, and the possibility of new forms of life.

The difficulty in characterizing what is involved in such speculation is evident not only in the differences between different philosophers but from Whitehead's claim (1929, p. 51) that "speculative Reason is in its essence untrammelled by method. Its function is to pierce into the general reasons beyond limited reasons, to understand all methods as coordinated in a nature of things only to be grasped by transcending all method." This can never be finally achieved. As Whitehead continued, "This infinite ideal is never to be attained by the bounded intelligence of mankind." Speculation is best

characterized through its history, although it has to be recognized that any portrayal of it is itself provisional with the potential to be transcended. However, as noted with reference to Hegel, the revived defense of speculation in Germany following Kant was inextricably linked with the notion of dialectics, and it is in relation to dialectics that it is best characterized. Dialectics itself has been characterized in different ways, however. This is not a problem since thinking dialectically involves taking anywhere as a starting point and through critique and considering then developing alternatives, moving to more adequate characterizations of that which is being investigated. For Plato, dialectics was the art of conversation in pure thinking. German speculative philosophers built on Kant's use of the term "dialectics" but rejected his characterization of dialectical arguments as sterile, never able to reach conclusions. While incorporating Kant's insights on imagination and concepts, they used Plato's notion of dialectics to reconceive it as creative.

Fichte, and following him, Hegel, Schleiermacher, and Schelling regarded their work as speculative because along with experience of sensible objects and the concepts required to cognize them, they gave a place to a third kind of experience – experience of the development of cognition and then appreciating the adequacy or otherwise of concepts used to interpret experience. Fichte embraced Kant's argument that there is a synthetic component to all our experience and judgments, involving imagination and construction, but went beyond Kant to argue that we can explain concepts as emerging through the organism's practical engagement in the world and that synthesis also makes possible speculative knowledge, knowledge of how old concepts could be brought into question and new concepts and conceptual frameworks elaborated to replace these. In characterizing this process, "synthesis" was used by Fichte to reformulate dialectics as a dialectical synthetic method. It involves revealing contradiction or vicious circularities in previously derived sets of propositions and then seeking out some new higher principle that allows one to avoid the contradiction or circularity and is therefore declared "necessary." There can be no algorithm

for solving such problems. Every such problem must be dealt with in its own terms, each requiring a fresh exercise in creative problem-solving. This is not conceptual analysis, logical inference, or syllogistic reasoning, nor is it empirical observation, but is thoroughly synthetic. It cannot be derived from the problematic set of concepts it resolves but is a product of imaginative thinking.

Hegel's reformulation of this dialectic involves three steps: taking a view, belief, concept, or category as fixed and then reflecting on this to reveal what is implicit within it but also to reveal its abstractness and one-sidedness and one or more contradictions. This is followed by a speculative step of positive reason in which a higher stage is reached which embraces earlier beliefs, concepts, or categories to achieve a more concrete, because less one-sided perspective. However, Hegel only gave an attenuated place to imaginative thinking. The later work in *Logic* was criticized by Schelling for geometrizing the dialectic, failing to acknowledge the creativity and openness of dialectics which, Schelling claimed, can never be completed.

Building on Plato's, Hegel's, and Fichte's notions of dialectics, Schelling went on to challenge Newtonian science to align science with history and art. Thought, including thought associated with practical engagement in the world, is inherently synthetic, Schelling argued, and begins with genuine opposition either between thought and something opposing it or other factors within thought. This necessitates a new synthetic moment that can be treated as a product or factor in the next level of development. Building on Kant's and Fichte's ascription of a central place to imagination in such synthesis, Schelling developed Kant's concept of construction and extended Fichte's genetic approach from the development of cognition to the development of the whole of nature. He characterized "intellectual intuition" as a form of knowledge gained through a reflective and imaginative experimentation and construction by the productive imagination of the sequence of forms produced by the procreative causality of what is unconditioned (the "Absolute"). Referring to this dialectic as the "standpoint of production" in contrast to the Kantian "standpoint of

reflection," Schelling sought to show not only the social conditions for objective knowledge (as with Hegel) but the nature of the world that enables it to be known objectively and explained while at the same time producing life and subjects that can achieve knowledge of it and of themselves. In doing so he gave a place to will as well as constructive imagination in the production of truth. This in essence is the whole project of *Naturphilosophie*, or speculative naturalism.

This work on speculation and dialectics was enormously influential, but later developments of these ideas were fragmented and often made no mention of speculation or dialectics. Schleiermacher, a contemporary of Hegel and Schelling and strongly influenced by Schelling, lectured on dialectics and intended to produce a work on this as his *magnum opus*, but died before he could write it. He is now known principally for having inspired the development of hermeneutics. While work on hermeneutics should be seen as advancing our understanding of dialectics and speculation, especially in the case of Paul Ricoeur, these terms were not used. Karl Marx and the Marxists also developed dialectics. However, Marx's dialectics influenced by both Hegel and Schelling was primarily critical, and Friedrich Engels' dialectics formulated as three laws was fundamentally undialectical. Both tended to extoll praxis as superior to speculative thinking. The identification of dialectics with Marxism had the unfortunate consequence that the term "dialectics" was dropped from the vocabulary of philosophers who did not want to be identified with Marxism, just as the identification of speculative philosophy with Idealism led other philosophers to avoid the term "speculation." Speculative dialectics had its most significant impact on work in the philosophy of science, and here that it was best defended, but it was not identified as such.

Speculation and the Philosophy of Science

While major scientists continued the Schellingian tradition of speculative naturalism, freeing themselves from the assumptions of Newtonian

science, reflections on science itself came to be dominated by the development of symbolic logic, that is, logic incorporating algebraic methods of reasoning developed in mathematics. This culminated in the development of logical empiricism and logical positivism emphasizing the importance of deductive logic, giving some place to inductive logic and no place to speculation. However, some of the most important logicians rebelled against this and did defend speculation, most importantly, C.S. Peirce and Alfred North Whitehead.

Influenced by Kant, Hegel, and Schelling and a scientist himself, Peirce as a logician argued that along with deduction and induction, there is also “abduction.” This is another name for speculative reasoning, while Peirce’s characterization of the circular relationship between these three forms of reasoning is really a further development of work in dialectics. For Peirce, abduction is the most important form of thinking, exemplified by Kepler’s explaining the observation of the observed positions of planets by postulating elliptical orbits. He was interested not only in particular scientific theories and defended metaphysical speculation, arguing that without reflection on metaphysics scientists are dominated by crude, unexamined forms of metaphysics. Abductive thinking is “ampliative,” that is, creative. Although not fully developing the idea, Peirce held such thinking to be metaphorical. He noted (1998, p. 392): “Metaphysics has been said contemptuously to be a fabric of metaphors. But not only metaphysics, but logical . . . concepts need to be clothed in such garments. For a pure idea without metaphor . . . is an onion without a peel.” Deduction as “necessary reasoning” has a place in working out the implications of ideas postulated through abduction, and observations are made on the basis of questions posed in terms of such ideas.

It was Whitehead, however, who focused explicitly on defending speculative philosophy. His contribution to understanding speculation was obscured by his claim that it has no method. Seen against the background of the history of speculative dialectics, however, it becomes apparent that Whitehead was part of this tradition and

making a number of important contributions to it. When it came to proposing new ideas or theories, he claimed a method of descriptive generalization, meaning “the utilization of specific notions, applying to a restricted group of facts, for the divination of the generic notions which apply to all facts” (Whitehead 1978, p. 5). Although he seldom used the term, he also was invoking the use of metaphors. He showed what is involved in elaborating and extending such theories by committing oneself to them, striving to show how they can be applied first in one case and then in all other cases. He observed the difficulty of avoiding blind spots in any speculative metaphysical scheme and argued that it is only through having rival schemes that the limitations of each could be revealed.

While the philosophies of Peirce and Whitehead were marginalized by logical empiricism, phenomenology, and ordinary language philosophy, from the 1950s onwards, their ideas were resurrected by historically oriented philosophers of science. Norwood Russell Hanson revived Peirce’s work on abduction in his work on patterns of discovery. Thomas Kuhn was strongly influenced by both Hanson and the historian of science, James Conant, who in turn had been strongly influenced by Whitehead. Later philosophers of science extended and refined their work. Most importantly, they examined the role of metaphors in science. Mary Hesse and Rom Harré were involved in this, but the most profound insights on metaphors came from Mark Johnson and George Lakoff. Johnson defined his own work as a development of Kant’s philosophy; however, his doctoral thesis was supervised by Ricoeur, and in transcending Kant’s philosophy, his work mirrored the earlier transition from Kantian critical philosophy to speculative dialectics. Lakoff then showed how mathematics itself is based on the elaboration of metaphors. Johnson and Lakoff together showed that language is largely composed of metaphors and metonyms, evidencing the speculative element in all our thinking and experiencing. Despite not defining this as the study of dialectics or speculation, work on metaphor has greatly advanced our understanding of speculation and its significance.

Summary: Speculation and the Possible

Freed by the proponents of speculative philosophy and post-positivist philosophy of science from the distorting claims of scientism, we can now recover the original meaning of speculation as reflective observation, enriched by the work of these philosophers. Peirce's notion of abduction provides the most useful starting point. This is the dimension of reasoning left out by logical empiricists in their characterization of valid reasoning, and from Peirce's perspective, it is the most important part of reasoning. Abduction is not simply a matter of deductive necessity nor of making provisional extrapolations on the basis of observed regularities, nor a combination of them, while deduction and induction presuppose previous abductive inferences. These are in the form of metaphors, beginning with metaphors that have congealed into the background, habitual assumptions as dead metaphors, or new metaphors. Speculative enquiry begins with questioning these previously taken for granted ways of perceiving and interpreting experience, making explicit the metaphors underlying them and making it possible to replace them. One of the most important challenges is to ask the right questions. The next step is to explore alternative ways of interpreting or conceiving that which is being questioned, and it is here that more creative thought is required. It is here that the deployment, development, and utilizing of new metaphors to overcome contradictions, inconsistencies, paradoxes, blind spots, and one-sidedness in past beliefs and interpretations of experience becomes important. Then comes the difficult process of articulating these metaphors into coherent frameworks of concepts and elucidating experience through them. To avoid blind spots, it is necessary to entertain other possible ways of making sense of that which is being examined and choose between them. This is a dialectical process which also grants a place to deduction and induction, but always understood in relation to abduction. No phase of this is easy or straightforward, and there is no ultimate finality in inquiry. Speculative thinking exposes one-sided thinking and leads beyond particular situations and problems and ultimately brings into question

the deepest assumptions of science, philosophy, and civilization and constructs of alternatives in the unending quest for insight and a coherent, comprehensive understanding of the world.

Acknowledging speculation in this sense supports Vico's claim that humanity is largely self-creating. Through speculation, not only are new possibilities for research opened up as taken for granted assumptions are brought into question and radically new concepts and ways of thinking developed, but new possibilities for society, civilization, and humanity are created. We can reconceive our conceptions of ourselves and our relations to each other and to other life-forms, not only theoretically but practically, envisaging and thereby creating new possibilities for the future, transforming the way we live, the way we organize, and how we engage with the rest of nature. As Mikhail Epstein (2012, p. 7) argued, humans create themselves by creating "new images, signs and concepts of themselves . . . humans do not so much discover something in the world of objects as build their very subjectivity by way of self-description and self-projection." Speculation frees us from the assumption that we are condemned by human nature to continue on our current paths, no matter how disastrous the consequences. Speculation creates new possibilities.

Cross-References

- ▶ [Abduction](#)
- ▶ [Complexity](#)
- ▶ [Consciousness](#)
- ▶ [Creating the Future](#)
- ▶ [Creativity](#)
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- ▶ [Potential](#)
- ▶ [Reality](#)
- ▶ [The Possible in the Life and Work of Alfred North Whitehead](#)
- ▶ [Wisdom](#)

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Speculative Research

Mike Michael¹ and Alex Wilkie²

¹Department of Sociology, Philosophy and Anthropology, University of Exeter, Exeter, UK

²Department of Design, Goldsmiths, University of London, London, UK

Abstract

This entry begins by distinguishing speculative research from the broader cultural and academic meanings of “speculation.” The present “constructivist” approach to speculative research places emphasis on the ways in which the research question, the researcher, the researched and research device are actively involved in a process of becoming-with one another. This is explored through the notion of the “research event” into which a multiplicity of divergent elements (micro and the macro, the social and the material, the cognitive and

the affective, and the human and the non-human) enters. In combining, they also “become-with” one other thereby opening the potentialities of the research event, including the possibility that it is no longer “about” research. Speculative research concerns enabling a sensibility attuned to this process of co-becoming. The entry suggests that a sensitivity to, and a taking seriously of, the “idiot” (i.e., that which does not make sense in the context of the research event as typically understood) facilitates this openness to the possibilities of the research event. More proactively, speculative researchers can also introduce idiocy into research events as a way of prompting participants to explore potential ways of reframing the research question, that is, of inventing new problems. The device of the “probe” (drawn from **design** practice) is used to illustrate this. It is further proposed that speculative research extends to the data analytic phase: introducing alternative materials (e.g., nonacademic artifacts) or traditions of engagement (e.g., **aesthetic**) can also enable “possibilistic” accounts.

Keywords

Speculation · Constructivism · Event · Research · Device · Idiot · Probe · Possible · Co-becoming

Introduction

Speculative research is a mode of empirical engagement that places emphasis upon the not-yet, the potential, the emergent, the **possible**, the co-becoming. Needless to say, these terms do not always map happily onto one another. For example, some authors would argue that the “**possible**” is emergent in the flow of a world of becoming, rather than provoked by methodological intervention; indeed, some would argue that it is not **possible** to operationalize the possible through a method; some authors would insist that at best it is only **possible** to become sensitive to a field of potentialities rather than specify particular possibilities. For present purposes, however, we

conceive speculative research in terms of the notion of the “research event” which is part of a world of becoming and thus might well emerge as something other than research. The obverse is that ostensibly non-research occasions may become “research” in the process of their eventuation. The point is that to talk about speculative research is not only to address the substantive issues inherent to research (e.g., energy demand reduction, science communication, biomedical innovation, etc.) but also to become open to different possibilities, the non-research and other-than-research possibilities immanent in a research event. The upshot of this formulation is that it is necessary to keep a fluid sensibility not only to the conduct of speculative research but also to what speculative research might actually entail.

In what follows, there is an initial outline of various approaches to speculative research. This is followed by an extended consideration of a particular approach to the speculative, including an explication of the relevant philosophical and practical underpinnings not least those that relate to the concept of the event. Following this, examples are provided of a number of conceptual and empirical tools. Particular attention is paid to the role of the philosophical figure, the “idiot” and how this manifests in a particular speculative tool the “cultural probe” (or “probe,” for short). This focus serves not only as a means of setting out key parameters of operationalizing speculative research but also a means to addressing and differentiating a variety of forms speculative research. Throughout, there is an insistence that there is nothing straightforward about these speculative “operationalizations” of the **possible**; they can, through a range of processes, undermine the **possible** and reinforce the probable.

Researching and Speculating

Recently, the notion of **speculation** has attracted renewed attention by social scientists and cultural theorists interested in understanding, explaining and theorizing process, novelty, becoming and individuation as immanent features of sociality. Although the term is typically associated with

risk, irresponsibility, or opportunistic endeavors (arguably, the precise opposite of sober empirical research) or an outmoded branch of philosophy interested in the exercise of pure imagination, **speculation** has gained renewed value as a way to critically explore possibilities and futures in contemporary societies marked by calculative logics and developments in science and technology. In so doing, and crucially, the version of **speculation** that we present here seeks to avoid the reduction of the speculative to a cognitive capacity or economic activity (Uncertain Commons 2013).

Clearly, then, the question of **speculation** raises issues related to sociotechnical futures and temporality which have been a longstanding preoccupation of social analysis. Social research, for instance, has a rich tradition in examining the discursive practices and rationalities by which societal futures are accomplished (or not) and managed, perhaps most recognizably through the identification and management of risk in “reflexive modernity” (Beck 1992) as well as the construction of hopes and expectations associated with new technoscientific developments (e.g., Brown et al. 2000). The move to the speculative, however, and as scholars interested in empirical **speculation** have argued (e.g., Savransky et al. 2017; Wilkie 2017), demands a shift in register from analyzing the manifestation, management, and contestation of probabilistic futures – how typically “rational” actors envision, model, predict, coordinate, and, in turn, configure the future in the present – to the construction of adequate concepts and devices for exploring **possible** latent futures.

Arguably, two distinct realist approaches have recently emerged as ways to understand, explain and theorize process, novelty, becoming and individuation, which seemingly share similar concerns but in actuality differ quite markedly. In brief, the first, entitled “Speculative Realism,” is the philosophical preoccupation with realism and ontology independent of thought and language (for an introduction, see Bryant et al. 2011). The various approaches associated with speculative realism have been inspired by Quentin Meillassoux’s (2008) “correlationist” argument

where thinking and being are viewed as indivisible, thus rendering knowledge of an independent ontological reality beyond thought and language a question of **speculation**. The second, which has occasioned considerable interest for social and cultural researchers interested in empirical **speculation** (see, for instance, the volume Wilkie et al. 2017), can be understood as a **constructivist** approach and draws on the work of A.N. **Whitehead**, Gilles Deleuze, and Isabelle Stengers. Here, speculative thought is practiced as a means for designing and constructing adequate concepts and “devices” that “actively relate knowledge production to the question it tries to answer” (Stengers 2008, p. 92), a process in which it is assumed that the research question, the researcher, the researched and research device are actively involved in a process of becoming-with one another. What counts as “real” in such research practices is a question of the strength and robustness of more-than-human distributions (constructions), and not simply the meanings, discourse or imaginings of persons. This, then, relates knowledge production to the question it tries to answer and the means by which this is achieved, evoking **Whitehead**’s ontological principle that states “there is nothing which floats into the world from nowhere” (**Whitehead** 1978 [1929], p. 244), including the researcher, the researched, and the instruments of research.

This **constructivist** approach to speculative method (see also Wilkie et al. 2015) can also be understood to follow Bruno Latour’s (2004) contradistinction between the “critical” and the **constructivist**. Here, and for Latour, to engage in **constructivist** analysis involves the production of more adequate explanations, rather than deflating or debunking the explanations and claims of others. In this view, debunking can also be understood as associated with the impetus to provide access to truth hidden by explanation or abstraction. By contrast, **constructivism** aims to strengthen the production of knowledge by actively acknowledging the practices and techniques by which knowledge, and indeed abstractions, come into being and in so doing concerns itself with the fabrication of concepts and

explanations as well as the devices and technologies that partake in the process of research – which, in the next section, we characterize as the “research event.” This, then, leads scholars interested in **speculation**, process, and change to engage in so-called inventive methods (Lury and Wakeford 2012; Marres et al. 2018) and the question of devising instruments and devices that relate to the staging and animation of the question or topic at hand (e.g., Guggenheim 2017). As Wilkie (2017, p. 348) argues, this demands a move from device-centered analysis (Marres 2012, p. 81) to a device-centered method and the devising of associated concepts and more adequate modes of abstraction (**Whitehead** 1997 [1925], p. 59) that this necessarily entails. If the speculative tools for philosophy are concepts that act as “lures” to vectorize thought (Stengers 2008, p. 97), then the instruments and techniques of empirical social research can be understood as part of a speculative toolkit. In this respect, such empirical “methods” act as “lures” for the **possible**. However, they demand a practico-theoretical care in their crafting and deployment not least because there is always a danger of retrenching the probable (de la Bellacasa 2017).

Research Event, Co-becoming, and the Possible

In the view adopted here, speculative research needs to begin with a version of the research event. This is because the event, as derived from the work of **Whitehead**, Deleuze, and Stengers, is marked by the multiplicity of divergent elements that enter into it. Accordingly, events are situated unities that entail heterogeneous elements – which **Whitehead** (1978 [1929]) names “prehensions” – that include both the micro and the macro, the social and the material, the cognitive and the affective, and the human and the nonhuman. These “concresece” or combine to produce a singular actual occasion or entity. Importantly, in the process of the concrecence of prehensions, those prehensions – the constitutive elements of the event – can, as Mariam Fraser (2010) argues,

“become-with” one other. This version of the event implies what Connolly (2011) calls “a world of becoming” in which as elements combine to produce events (which in turn combine to produce “subsequent” events), there is an unfolding of the world that can be unexpected or novel or, “possibilistic.”

In applying this model of the event to research, the social scientific “research event” becomes less a process in which, through standard methods, the researcher engages and documents the social world. Rather, it is an occasion in which the various elements that are involved in the research event – broadly, the researcher, the researched, and the research (devices, settings, objectives, etc.) – can mutually co-become. In the process, there is no easy way of “finding stuff out” for both “finding” and “stuff” might have shifted. Rather than seeking a solution to the research problem that originally underpinned the research, it is important to orient toward a different matter, namely: what has become newly interesting about the research event? In this sense, research becomes a case of asking better questions, or, as Fraser (2010) has framed it, of “inventive problem-making.” Put simply, the research event as articulated here implies that researchers need to be circumspect about looking for answers to preformulated research questions and should sensitize themselves to the co-becoming that occurs in the research event in order to derive more inventive problems. The corollary to this is that researchers are themselves entangled in the becoming-with of the research event, and, as such, they need speculatively to engage with – to practice what Connolly (2011) might call “exquisite sensitivity to the world of becoming” – how the research event unfolds toward the **possible** (even when it unfolds into something other than an identifiably “research” event). In the broadest sense, this perspective suggests a methodological sensibility that requires “an openly **constructivist** approach that affirms the **possible**...actively resists the plausible and the probable targeted by approaches that claim to be neutral.” Stengers (2010, p. 57).

Responding to the Idiotic in the Research Event

One way in which the researcher might respond to the novel or possibilistic unfolding of the research event is by becoming attuned to the idiotic during empirical engagement with participants. The “Idiot” is a philosophical figure whose behavior “does not make sense” within the assumed framework of the (research) event. The idiot thus “resists the consensual way in which the situation is presented in which emergencies mobilize thought or action” (Stengers 2005, p. 994). Its analytic usefulness lies in the fact that it remains indifferent to the researcher’s concerns and thus opens up the possibility of prompting the researcher to wonder whether “there is something more important” (2005, p. 994) going on in the research event which the researcher has yet to grasp. In other words, is the research event comprehensible in other ways – ways that might challenge the assumptions on which the research event rests?

One implication of this framing is that certain burdens are placed on the researcher. In particular, they must exercise care with respect to the idiot (and indeed the self), taking its ostensible waywardness seriously rather than neglecting, ignoring, or dismissing it (de la Bellacasa 2017). It is, after all, often difficult to identify the idiocy at work in a research event: school students’ collective proliferation of accounts reflects not the pre-existing range of accounts but a competitive game of collective creativity. Or, it is easy to see research failure and to self-derogate: an interviewee’s unwillingness to answer the research questions reflects not the incompetence of the interviewer but the enabling copresence of her companion animals (see Michael 2012). What such a careful sensibility toward idiocy does is enable **speculation** about the **possible** meaning of these events, to seek in them more interesting problems. Does the students’ playfulness suggest that the research event can be an occasion for testing the believability of accounts? Does the interviewee’s resistance indicate that the interaction of hybrids – combinations of humans and

nonhumans – might be more useful ways of thinking about the unfolding of interview research events?

In this section, the focus has been on carefully detecting the idiotic in the research, sensitizing the researcher to the ways in which the idiotic prompts new possibilities, and, in particular, more interesting problems. The idiotic is used here simply to indicate those actors or moments or behaviors that can be understood as not “making sense” within the framing of the event as a research event. On this score, the idiot is indicative of other ways that social scientists engage with the **possible** through “making the familiar unfamiliar” (Highmore 2002), “attunement” (Stewart 2011), “breaching” (Garfinkel 1967), or “idle walking” (De Certeau 1984).

However, it should not be forgotten that the researcher too might appear idiotic to participants in research events, not least when their questions, framing, or problems make little sense to the participants. This raises the interesting prospect that researchers can deliberately introduce idiocy as a part of a research strategy that potentially entails the novel unfolding of the research event in ways that engage the **possible** and are generative of more inventive problems. The above, however, also warrants a caution to resist anthropomorphizing the idiot, which for our purposes is a figuration of certain kinds of processes taking place in the (research) event.

Introducing Idiocy into the Research Event: The Probe

To introduce idiocy into the research event involves the staging of a mixture of the familiar and the unfamiliar. Firstly, the “idiotic device” or “idiotic moment” must be sufficiently unfamiliar (strange, opaque, playful, open) that the participants in a research event find themselves curious, intrigued, and, crucially, willing to engage with it. The idiot cannot be too unpredictable, otherworldly or threatening otherwise it will simply alienate participants, who will dismiss it, or ignore it (much as researchers might disregard participants who are “idiotic” – see above). Needless to

say, it might be the case that participants are themselves resistant to the strangeness and undecidability of the idiotic device, might have recourse to “conventional wisdom or power” as Connolly (2011, p. 159) has remarked.

So, what forms can these introduced idiots take? Here, the emphasis is placed on a particular sort of idiotic device, drawn from a speculative and critical traditions in **design**: this is the probe. In what follows, we consider and illustrate its broad characteristics.

Boehner et al. (2012) describe probes (shortened from the original term, “cultural probes” – Gaver et al. 2004) as designed to access “what might be.” Instead of pursuing accurate representations and generalizable findings, probes are focused on rather more partial, risky and idiosyncratic accounts that can be understood to serve as **speculations** on how the research event might unfold. They are usually comprised of objects and instructions that ask the participant to engage in an odd exercise. Often probes are collected together in a package that is sent to volunteers or distributed at research events. The following is a selection of probe tasks that Gaver and his collaborators have designed and distributed:

- A “Listening Glass” which is a standard drinking glass with instructions that ask the volunteer to press the glass against a wall so as to hear the unusual sounds produced by the house. A marker pen is also included so that the perceived noises and their meanings can be recorded directly onto the surface of glass.
- A customized disposable camera that includes instructions to the volunteer to photograph something observed from their kitchen window or to photograph the spiritual centre of their home.
- The “Telephone Jotter Pad” allows participants to add to doodles to it in response to the images or questions it incorporates, and while engaged in other activities (not least answering the telephone).
- Community maps where members of different constituencies interested in energy demand reduction were asked to produce a visualization of their “common community” using a

preprepared map projection with pens and a variety of specifically designed stickers that included depictions dinosaurs, spiders' webs, cups of tea, alien spacecraft, and the like.

- Participants were asked to write their guilty energy-use secrets or an obituary for a favorite appliance on a specifically designed pre-addressed and postage-paid letter or an obituary template, respectively.

By virtue of their oddness, playfulness, opaqueness, and so on, each of these probe exercises were designed to leave open the sorts of responses that were **possible**, to prompt their users to think otherwise, and, indeed, to trouble any presumed framing of the research event in which they (and the researchers) were involved. For instance, in the examples mentioned in last two bullet points, which were part of a large research program investigating the role of community on energy demand reduction (Boucher et al. 2018), part of the aim was to challenge the typical meanings of “community” that inform such research. Does constructing a collective community open up the possibility that “community” is at once fragmented, contested, competing in unexpected ways? How does admission of guilty energy usage situate the participant in relation to their energy demand community (which might be composed of many guilty energy usages)? Does writing an obituary for a favorite appliance imply that appliances are part of a community, and what does being a “part of” mean in this context?

In summary, the use of probes, because it renders the research event uncertain, opaque, playful, etc., serves as a means to prompting **speculation** among participants. This **speculation**, in turn, serves as a prompt for the researchers to open up their assumptions about what their research is about, and to facilitate their own **speculations** about the possibilities of what might count as an interesting research problem.

Now, the probe is just one technique by which the **possible** is prompted. Other researchers might craft a set of speculative objects or activities in collaboration with the participants themselves (e.g., Dantec and DiSalvo 2013) or might invite

participants to speculate on the **possible** by considering or contemplating (rather than practically engaging with) exhibited, more or less highly finished technological designs whose functions remain opaque or uncertain (e.g., Dunne and Raby 2013). Once again, having made these points, there are no guarantees that the probes (or other such objects) will work: designers and social scientists who use probes acknowledge that not everyone responds positively, or at all, to the tasks set in the probes.

Analyzing Idiotically: Speculating with Others' Speculations

The materials – the texts, images, recordings, etc. – that are returned from the probe exercises need not be treated in the usual social scientific ways. These “data” need not be studied and mined in order to discover common themes, or analyzed in order to identify patterns of meaning (such as opposing discourses, or an array of imaginaries, or a nexus of significations). Rather, the ethos of engagement with these can be more idiotic insofar as it seeks those elements that “make no sense”: images, juxtapositions, text, scribbles, murmurings that invite speculative researchers “... (to) slow down, so that (they) don't consider (themselves) authorized to believe they possess the meaning of what they know” (Stengers 2005, p. 995). In relation to the present formulation of the research event, the researcher is opening themselves up to co-becoming with these materials in novel ways. Put otherwise, the research needs to “bestow efficacy upon the murmurings of the idiot” (Stengers 2005, p. 1001) so that what counts in the research can be interrogated, revisited, or reinvented. It is important to note, however, that any “data,” whether derived through speculative research or through more traditional social scientific methods, can be subjected to this sort of speculative engagement (e.g., Stewart 2007).

This speculative engagement with data can involve several activities. For instance, data can be analyzed in terms of what appears especially unexpected or unusual. Or they can be situated in

relation to a range of other materials both academic and nonacademic (Highmore 2002). Regarding the former, inviting others into the analytic moment can yield unexpected readings, especially if they themselves have a peculiar, distinctive, or idiosyncratic perspective on the more or less relevant academic literature (what Billig 1988, called “scholarship”). With regard to the latter, links, juxtapositions, comparisons, etc. with texts and images drawn from a variety of media (such as magazines or newspapers, from the histories of **design** or art, etc.) can cast a different light on these data that open up the possibilities of attunement and engagement. It is also **possible** to treat such data “**aesthetically**” as a way of accessing the potential, or **possible** (see Michael et al. 2018). Specifically, as Massumi (2011) suggests, in the **aesthetic** encounter the experience of the artistic object or event can be fleeting, highly affective, emergent, and generally difficult to pin down. In the process, multiple possibilities can become available for how one grasps that object or event. The same can be said for the researcher’s engagement with their data: data become an opaque, shifting field of affects which enable the researcher to seek in them clues to the potential and the **possible**.

Cross-References

- [Aesthetics](#)
- [Design Thinking](#)
- [Speculation](#)

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Spirit

► Spirituality

Spirituality

Erik Mansager
Webster University, Geneva, Switzerland

Abstract

This article imbeds the concept of spirituality within lived human experience, as a holistic rather than other-worldly phenomenon. It starts with a review of the history of the word “spiritual” that gave birth to a concept of “spiritual-ity.” The development of word and concept are

traced within their specifically Christian context and then viewed to see how they were experienced and explored as independent of this original religious mooring. Spirituality is then seen as an aspect of the world religions before investigating the notion that it can be considered, in part, the substance of the human capacity for making meaning. As a result, it is described both as the *transformative experience* the word was originally intended to convey and as an *academic discipline* whose aim is to study such experiences. The examples of academic studies were selected to illuminate the variety of fundamental human activities which comprise spirituality as defined below.

Keywords

Spirituality · Transformative experience ·
Meaning making · Self-transcendence

Synonyms

Inspiration; Integration; Mindfulness; Prayer;
Self-transcendence; Self-transformation; Spirit;
Striving; Ultimate value

Definition

Definitions for *spirituality* proliferate among scholarly disciplines – religious and theological as well as sociological, anthropological, and psychological. What Allport (1950), for example, identified as “religious sentiment” includes the “spiritual activity” of seeking ultimate meaning or ultimate value – whether concerned with theism or not. This “search for the sacred” (Pargament 1999) addresses a rudimentary riddle of human existence. While spirituality shares with these other disciplines the universal search for knowledge and meaning, it is distinguished from them by the *direction* in which it poses its questions (e.g., about the sources of transformative experiences) and the *area* from which it anticipates its answers (e.g., which discipline will provide understanding, Küng 1987/1988; Ricoeur 1976).

Examination of the meaning-making creativity of such deep human inquiry has discerned four characteristics of an individual's spiritual movement – each of which intertwines with facets of the possible:

1. The universal human activity of *striving* – a teleological movement that acknowledges “we live lives that are fundamentally oriented towards the future” (Glaveanu 2018, p. 524).
2. The effort made toward life *integration* – an interweaving of dimensions which “make sense of the past, present, and future, both individual and collective” (Glaveanu 2018, p. 523).
3. The pursuit of *self-transcendence* – which moves beyond integration “and, above all, transforms our experience of the actual” (Glaveanu 2018, p. 519).
4. The conceptualization of one's *ultimate value* – that which though subjective, cannot be surpassed given its embrace of infinite perspectives, in Glăveanu's (2015) parlance.

The interconnection of these characteristics takes account of more succinct descriptions such as “striving to make meaning” (Emmons 2005) as well as the humanistic approach of “developing one's self to one's full potential” (Mansager and Bluvshstein 2017). Spirituality scholar, Sandra Schneiders (1986), originally took the terms from her broad consultation among male and female, interdisciplinary scholars who represented numerous Christian denominations from Europe, North, and South America. The consensus definition she employed follows:

[T]he experience of consciously striving to integrate one's life in terms not of isolation and self-absorption, but of self-transcendence toward the ultimate value one perceives. (p. 266)

Herein, the four salient features intertwine to characterize spirituality in a broad number of human sciences (e.g., sociology, linguistics, history, feminism, ecology, business management, etc.) which focus on its many possible human expressions. Still, the terms striving, integration, transcendence, and ultimate value are not captive to any one academic field. When a commensurate use of

the terms is agreed upon among the many invested disciplines devoted to study spirituality, a robust, developmental understanding of spirituality emerges.

Introduction

Fitting the spirit of Palgrave's *Encyclopedia of the Possible*, this article is not a straightforward academic presentation on the topic. The author presents a broad and somewhat provocative look at what spirituality could *possibly* mean in the run of everyday life and intends to look at spiritual movement as a *human* phenomenon. What “possibility” means in this arena is that the wonders and inspiration typically associated with spirituality can be viewed as part and parcel of the human being's fundamental make-up! The desire to grow beyond or transcend oneself, the search for deeper meaning, or the urgency to live a full and meaningful life entails accessing wholly human abilities or potentials (e.g., Collins 2010; King 2013). Whether these abilities are evolutionarily developed (e.g., Groff and Marx Hubbard 2014), are “god-given” to the human being (e.g., Wilt et al. 2019), are generated from past-experiences in this life (e.g., Illman 2012), or are felt as if they come from several prior lives (e.g., Bender 2007), the intentionality and anticipation of spirituality still activates the here-and-now, flesh-and-blood individual. The spiritual proclivity resides in the human heart and mind.

This much we can experience.

Our holistic world is marvelously intertwined and there need be no final agreement on what power or entity – if any – generates our deeper inward movements – inside or outside us. Speculation, study, and conclusion on such matters will be addressed in collateral articles within this *Encyclopedia of the Possible*. It will be enough for this article to lay out simply but clearly – in two movements – the opportunity and challenge that spirituality has presented since its initial conceptualization in history. The first movement is one of personal *experience* (“History and Development of Spirituality”) which describes how spirituality developed after its inception. The

second movement is one of *exploration* (“Interfacing with Other Disciplines”) which lays out how scholars have grappled with spirituality and formulated their craft to do so. In terms of the possible, the author’s structure reflects Thrash and Elliot’s (2004) finding that “inspiration” – understood here as more than etymologically related to spirituality – has the relatively passive characteristic of *being inspired by*, which is addressed in the first movement, as well as the more active characteristic of *being inspired to*, which is addressed in the second movement). Throughout the article, the author interweaves representative examples of the transformative experiences as well as examples from spirituality scholars to illustrate the richness of the experience and the scholars’ endeavors. This won’t exhaust the matter, but it may go a good distance in the direction of helping the reader understand the long road of human interest in spiritual movement.

History and Development of Spirituality

First Millennium of the Common Era

Unlike religion itself, spirituality was not *originally* conceived to give expression to the most profound human experiences – even though it has come to express and to study those experiences. According to spirituality scholar, Sandra Schneiders (2005), the individual that coined the term “spiritual” was most likely Saul of Tarsus. He is better known by the name, Paul, which he took after a self-transcendent experience which left him adhering to the very beliefs of the nascent Christian community he was trying to eradicate from his Jewish homeland.

The concept of “spirit” (*pneuma*) was familiar in sacred and profane literature during his lifetime. Still, conceptualizing the word as an adjective, used in order to modify the understanding about and describe the experience of an individual, was altogether new at the dawn of the Common Era. In his newfound faith, Paul felt compelled to describe how he personally experienced – and how others seemed to be influenced by – the “Holy Spirit” of the god he newly understood as Judeo-Christian and his “resurrected

son,” Jesus. To distinguish his former Jewish associates and the few nonbelievers in his world, from the nascent Christian, posttransformation experience, Paul considered the faith filled Christian to be a “spiritual person” (*pneumatikos anthropos*); contrasted with the wholly “natural person” (*psychikos anthropos*) who was not so inspired (1 Corinthians 2:14–15).

The legacy which Judaism lent to current spirituality must not be overlooked, of course. Any history of the topic (the Seabury *History of Christian Spirituality* is followed here) acknowledges the Torah, Jewish liturgy, piety, the *Berakah* (blessing-thanks-giving) and especially Jewish mysticism as precedent and integral to Christian spirituality and the phenomenon of Christianity itself: Jesus (Yeshua) being embraced as the Messiah/Christ of the oppressed. The “*change of heart*” (*metanoia*) which Paul experienced and that allowed soldiers, judges, tax-collectors – whether remaining in-position or abandoning their position – to engage others in an absolutely different manner, was attributed to an “acceptance *into one’s heart*” of the spirit of god that Jesus proclaimed. This was the original understanding of spirituality. The constituent characteristics of spirituality as defined above – *striving* toward an imagined, newly possible completion, *integration* of one’s livelihood with one’s faith life, *transcendence* of one’s prior engagement in life and thus opening to the even-now-but-not-yet (Küng 1978/1980) and *ultimate value* the “Spirit of God,” “the Spirit of Christ” – can already be discerned here.

Throughout Paul’s lifetime, during the formation of the primitive Christian church, he promoted the importance of the “spiritual person” and described frequently how such transformed people could be identified. That is, they actively expressed “charity, joy, peace, patience, kindness, goodness, fidelity, gentleness, self-control” (e.g., Galatians 5: 22). These are the expressions which imitate a “divine love” (*agape*). This type of love was understood as an action-oriented caring which Jesus was believed to reflect from his “heavenly Father.” It was simultaneously what those *inspired by* the “Spirit of Christ” intended to emulate among one another.

The expression of “self-control,” which Paul includes in his list of spiritual characteristics above, is developed elsewhere in his writings into a more comprehensive asceticism which folds back into understanding the puzzling death endured by his “Lord, Jesus”: a criminal’s death. Jesus’ repugnant death by crucifixion was re-interpreted by Paul as the “cross of glory” – the divine expression of *agape* which led to the “salvation” of humanity. Paul’s having been *inspired* to develop an ascetic approach to life is mentioned here as being at the root of Christian spirituality and of Christian identity. It was by immersing themselves in such a spiritual lifestyle that Christians were able to endure and embrace so “wholeheartedly” the terrors of martyrdom during the early centuries of Christianity’s development. Thus, ascetics and martyrdom became identifying features of early Christianity. At the core of the ascetic spirituality lay “fasting and almsgiving” – wherein depriving oneself, assisted the Christian in being free from material *want* so that one could subsequently provide for the material *needs* of the poor (Bouyer 1960/1982a, p. 530).

Early in the fourth century, Roman emperor, Constantine ended religious oppression throughout the Empire, with the result of ending the hostility aimed at Christians. As persecution and martyrdom had become a defining aspect of the milieu in which Christianity had thrived, Christians subsequently needed to reassess their identity in the absence of persecution and martyrdom. Cessation of the persecution was considered a Christian triumph when Constantine himself converted to the soon-to-be-established religion. Still, *agape* and asceticism had gone hand-in-hand until that time. With its view of embracing poverty as Jesus had – ascetic monastic practices (some, notably severe) – developed symbolically to take the place of martyrdom.

Whatever one makes of the exaggerations and abuses of ascetic expressions of spirituality, they intended to focus on living in accord with “the Spirit of Christ,” “the Spirit of God” which Paul had so indelibly impressed on the Christian community. He did so by his preaching and writing, and, like the original disciples of Jesus and the later “Fathers,” he did so by practicing

rudimentary rituals such as baptism (with its symbolic dying into water and rising up in “new life”) and a liturgy of thanksgiving (*eucharist*). This shared meal became a frequent occurrence which assured the community’s persistent recollection (*anamnesis*) of Jesus “death and resurrection” legacy and offered the opportunity for regular demonstration of the “divine love” shared among the believing community. The meal setting included readings from Jewish scriptures – those which shed light on Jesus’ life and mission – along with letters from “the Fathers” – and “Mothers” if current research bears out the re-attribution of some scriptural authorship to female leaders in the early Christian community (Schüssler-Fiorenza 1984/1994).

After Constantine’s acceptance of Christianity, the religion and its spiritual expression spread beyond the Roman western world and came with him east to his new capital city, modern Istanbul then known as Byzantium (thus Byzantine empire). Later named in Constantine’s honor, Constantinople, this Greek-oriented empire came to interface and later clash directly with the newer religion from the middle east, Islam, during the seventh and eighth centuries. The Christian spiritual life of integration and self-transcendence was formed around two primary poles in the Byzantine world: the liturgy and the development of iconography – sacred art depicting “the Christ factor” (Bouyer 1982b, p. 549) as ultimate value.

All this is shared to present the externally consistent conception of an active spirituality practiced within the Christian context until the late middle ages – the eleventh century: Christian believers living lives of love expressed in gratitude to their god while embracing asceticism so they could be mindful of the needs of others and actually helpful to the needy. These threads were retained throughout the development of Christian spirituality during the first millennium.

Second Millennium of the Common Era

This stable, multifaceted expression lasted until the rise of Christian theological schools (e.g., primarily the Dominicans but also Franciscans), after which it took on new characteristics. In the first centuries of the second millennium,

scholastics made use of a developing command of philosophy to define more precisely “sound doctrine” (*orthodoxia*). This university, or school-based understanding, intended to “fit the facts of spiritual experience into its scholastic theory” (Leclercq et al. 1961/1982, p. 506). For example, it was within the philosophical milieu of the twelfth century that Paul’s first century countering of “the natural” to “the spiritual” person took on an added rational dimension. Rather than solely emphasizing “life in the Spirit,” monastic and philosophical developments so narrowed the concept that spirituality was promoted as the *positive* opposite of *negative* somatic, bodily experiences. In time, the material world was opposed by the spiritually minded, reform-oriented poverty movements of medieval Christianity – e.g., Waldenses and Cathars. For them, “spirituality” over against “materiality” was expressed by valuing the sanctity of the individual separate from a respect for the hierarchy and sacraments (Bouyer 1982b, p. 264). This new opposition earned the wrath of the established church leadership. Thus, the once “persecuted church” became the “persecuting church” of the thirteenth century. Persecutions against “heretics” were the inevitable outcome, even while the intentionally impoverished lifestyle persisted under the influence of a more “orthodox” Franciscan spirituality. At the time when church authority intermingled with secular authority in defeating the “heretics,” the concept of spirituality took on yet another meaning: differentiating the eternal from the temporal, legalistic order. From that point, spiritual life was conceived as more salutary than the material life. It could be distinguished from secular life and was conceived as an interior life of perfection. This involved “methodical systematic meditation, and active devotion to Christ in his mysteries” (Vandenbroucke 1961/1982, p. 457).

These later configurations of spirituality and the spiritual life, especially the legalistic aspects, seem to have dominated the next two centuries without displacing the core. Love, thanksgiving, and asceticism – the Paulinian fundamentals of spiritual life all firmly fixed in Christian scripture – were at the foundation of such fifteenth-century spiritual classics as *The Imitation of Christ*

(Thomas à Kempis 1380–1471). Thus, individual spiritual activity gained prominence by attending to the Christian scripture. The modern or “new devotion” (Geert Groote 1340–1384) which *The Imitation* championed, emphasized the search for inner peace: simplicity along with contemplation of Jesus’ death – with the aim of discerning the implications for one’s own death. Devotion gained prominence among initial Catholic reform movements as well as the official protesting “Reformers” of the sixteenth and seventeenth centuries (e.g., Calvin 1409–1564, Luther 1483–1564, Melanchthon 1497–1560, Zwingli 1484–1531), while the term spirituality took on different undertones among both Catholics and Protestants. The reformers reasserted that “justification” or “salvation” was won by adhering to the Christian faith found in its scripture. To varying degrees, Protestant attention to more outward signs of “election” became contrasted with spiritual activities and a Catholic turn inward which continued to reference the “interior life” of the believer.

By the eighteenth century, not exclusively among Catholics, the interiority of one’s faith life had been well-established along with a more individualized notion of “internal perfection.” Spirituality represented a promotion of “more than” the everyday living of one’s faith which Paul had promoted. The “spiritually devoted” intended to live exemplary lives of moral and contemplative perfection and as a result, the devout sought out guides to show the way. “Spiritual direction” became an initiative of sorts and in both the nineteenth and twentieth centuries which promoted this individual life of perfection as synonymous with the concept of spirituality.

From the eighteenth to the dawn of the twentieth century, spirituality became firmly set as “internal perfection.” This spiritual outlook seemed much affected by the cataclysm of dual World Wars in the first half of the twentieth century. These wars, waged primarily among Christian nations, resulted in a minimum of 76 million deaths. This slaughter, the likes of which the world had not experienced, spawned peace efforts that provided an opening among the Christian churches toward reconciling with one another. The peace effort seemed to act as a catalyst for

the deep soul searching that ensued, allowing the Christian churches to find a model of reunification. After the failed example of the League of Nations (1920), which was championed by the psychologically racially conflicted 28th US President (Yellin 2013), the churches in imitation of the United Nations (est. 1945), found its model and established the World Council of Churches (WCC) in 1948. This remarkable year brought forward not only the WCC, but also an opening toward the other world religions. After the horror of the Holocaust, the recognition of Israel (est. 1948) as a modern Jewish nation brought new awareness to that ancient faith; simultaneously Gandhi's (1869–1948) development of nonviolent protest brought attention to Hinduism and Islam. This dialogic confluence has seen rapid growth in awareness about how spiritual practices also characterize non-Christian religions.

Along with the political and religious developments that occurred during the twentieth century, the development of a “new psychology” early in the last century, lent itself to therapeutic intervention and the healing of the human person. The nascent psychotherapy movement directly impacted the “spiritual direction” initiative. Freud, Adler, and Jung – the “triple star” of the new psychology (Ellenberger 1970) – all interfaced with spiritual direction of their era: Freud (Meng and Freud 1964) by way of Pfister, Adler (1964/1933) by way of Jahn, and Jung (1970) who included an esoteric approach to psychotherapy.

Pastors such as Oscar Pfister and Ernst Jahn began incorporating psychological practice and theory into their “care of souls.” Eventually the “pastoral counseling” movement became an instrument for spiritual development and by mid-twentieth century spirituality had been embraced by a “third force” or humanistic psychology which proposed an inherent goodness in humanity along with the possibility in need of development: a “fully functional individual” (Maslow 1971). Perhaps primarily due to Jung's arcane methodologies, nonreligious examples of transformation became an object of psychological inquiry. Such openness acknowledged and prepared the way for

profoundly humane concerns to come into focus as expressions of self-transcendent experience – the health of the environment, equality among the sexes and sexual orientations, feminism per se, animal care, and the like. Soon enough, a “fourth force,” transpersonal or spiritual psychology (Ferrer 2001) developed. Psychology became especially juxtaposed with spirituality in the rise of a “New Age Spirituality” in the late twentieth century; devoted to “experiences in which one's sense of identity or self extends beyond (*trans*) the individual or personal to encompass wider aspects of humankind, life, psyche or cosmos” (Walsh and Vaughan 1993).

Such is the history of the development of self-transcending phenomena of spirituality. In Craft's (2015) words, what started as “possibility thinking” – a Christian description of a personal life changing experience – has since become recognized as a basic human possibility: a striving to integrate oneself in a transcending manner toward one's ultimate value.

Spirituality Interfacing with Other Disciplines

We are two millennia away from Paul's original conceptualizing about the “spiritual person.” Still, his development of spiritual life as embracing love, gratitude, and a level of poverty manifest in today's actualizing and transpersonal approaches to daily life. From mindfulness-based stress reduction (Kabat-Zinn 2013) aimed at restoring inner equilibrium to chronic-pain patients to the transformational psychedelic Ayahuasca ceremonies of South America and increasingly of Europe, which aim to discover one's inner self (Narby 1999), the path of understanding one's “inner life” remains a vibrant one. So, here at the end of a brief historical review, perhaps it is not too difficult to recognize that Schneiders' (1986) constituent aspects of spirituality are still operative in what is considered spirituality today:

- While physical and psychological “drives” are considered causal phenomena (etiology)

bringing about results after their occurrence, today such drives are contrasted with *striving*, or forward-planning, goal-oriented movement (teleology). It is striving that is emphasized by contemporary psychologists who identify a growing goals revolution in a postmodern world (e.g., Emmons 1999 following Adler 1931).

- *Integrating* one's life recalls "systems theory" found in several disciplines from anthropology, through political science and sociology, to zoology. It also suggests the importance of differing perspectives (cf., Glaveanu 2015) as well as the psychological concept of individuation (Edward et al. 1992).
- *Self-transcendence* is popular again partly due to transpersonal movements of our day. Other established disciplines such as humanistic psychology, existential philosophy (Frankl 1946/1984) also understand "going beyond" one's self-understanding does not need to be a transpersonal experience (Anderson 1991). Self-transcendence is considered a positive mental health characteristic which prepares one to contribute more effectively in everyday life (Ansbacher 1992).
- *Ultimate value* is understood as one's subjective evaluation about that which organizes action toward one's personal goals. Peoples' lives move toward what is valued. This can be an immediate conscious value, or what one conjectures unconsciously as ultimate value (Emmons 1999; Schneiders 1986).

The characteristics above have been present within the transformative experiences discussed thus far. The context for such experience was first identified as the Christian community, and then the world outside of that community – as the larger seeking-community. Concurrently, a well-established research literature has grown up around the broadening phenomena of spiritual experiences (Alexander 1980). Like the transformative experiences themselves, such studies started within the Christian community's theological discipline. Although research about self-transformation no longer necessarily depends on theological positions, we, too, turn to a more

academic exploration of the discipline of spirituality.

Spirituality as a research exercise takes place among varying disciplines and can be described in various manners. What is universally agreed to is that the scholars studying spirituality are interdisciplinary in their research. Any study of transformational experiences necessarily includes several disciplines interfacing with one another. Which disciplines produce the research and how the disciplines interact to obtain their information depends on the *problematic* circumscribed by the investigation – that is, what is of interest about the spiritual experience to the investigator? for what problem is a solution being sought? The mingling of methodologies will be addressed below. Initially however, spirituality studies can be differentiated along three continua (Schneiders 2005): the historical, the theological, and the anthropological; and they can also be considered from inclusive-exclusive and vertical-horizontal approaches.

The historical disciplines are probably most applied to studying spiritual experience or movements. This is likely because spiritual experience as such is a subjective experience by someone that is located somewhere in time. Spirituality can be looked at by experienced historians who can assist by placing it in context, broad or narrow, which helps the reader better grasp something of the "what" that occurred "when" (Lee & Kanazawa 2015). However, the spiritual experience can also be looked at by the spiritual scholar who may be interested in the manifestation of a particular type of experience and how this has manifested over time – for example, one could have an interest in those who lived a solitary life for transformative purposes and how this compares across Chan Buddhists (Heine and Wright 2010), Christian hermits (Williams 1962) and Hindu Sadhus (Flood 2008). This latter approach might be envisioned as historical spirituality scholarship.

The theological disciplines commonly study spirituality from a vantage that includes experiences located inside the base religion of that scholar. For Christians this would likely focus solely on transformative experiences related to "the life derived from grace." Whether or not the

spiritual experience was related to a theistic belief might be thought of as an “inclusion-exclusion criterion.” So-called “vertical-horizontal” considerations can also be applied. Herein, verticality contrasts differences among theistic religions: Judaism vs. Christianity vs. Islam; while horizontality compares similarities among them (codified behavioral traditions, creedal beliefs, and established rituals (e.g., Cohen and Heldrich 2002). While the vertical could explore the *relative similarity* of a hierarchical concept of “God above and humans below” within Christianity (e.g., Holder 2005), Judaism (e.g., Mintz and Schiffman 2005), and Islam (e.g., Nasr 1987) altogether different considerations would be determined for studying the nontheistic spirituality of Buddhism or Confucianism (e.g., Carmody and Carmody 1994/2015). A horizontal consideration could also take into account the *differences* among nontheistic spiritualities. For example, such studies recognize to what degree each spirituality relies on written scriptures or spoken inspirations (Thundy 1993).

The *anthropological disciplines* are, in principle, open to all transformative experiences, understanding them to be “the structure and dynamics of the human person as such” (Schneiders 1989, p. 682). The anthropological methodologies acknowledge the concept of spirituality as being “rooted in our primordial origins” and as “a fundamental human dimension” (Gellel 2018, p. 17). It is also fair to conceive of the anthropological disciplines as focused more on the whole person rather than the “interior life” as do most theological disciplines. From the theological vantage point if the “interior life” is contrasted with one’s “external life” spirituality research could be considered a dualistic undertaking – similar to the dichotomizing of “material” and “spiritual” as opposites. While anthropological approaches can also include dualistic formulations of spirituality, the more holistic styles of spirituality are included there (e.g., Carr 1986). As recently as the 1980s this dimension was referred to more in “religious” than “spiritual” terms. It is in light of the coming together of religion and spirituality in the academic arena that spirituality as an academic discipline has expanded dramatically (c.f., Pargament

1999; Schneiders 1989; Spalek and Imtoul 2008).

As to the interdisciplinary nature of spirituality and to the interface of the methodologies, each researcher considers which disciplines constitute the research program in question. Constitutive disciplines supply the frame of reference and thus the data of the spiritual experience. For example, primitive accounts of Christian bishops and their social organization might be the focus of *historical* researchers, while religious documents including scripture might serve as the focus for *theological* researchers, and perhaps descriptions of “natural highs” and in vivo spiritual participation would be the focus of *anthropological* researchers. But the *focus* brought to this positive data will also expose a specific problem to be explored; and this problem identifies which disciplines will be needed to address that problematic. Again, by way of example, political impact of the bishopric may require political science to be the lens of the *historical* researcher, the authenticity of “orthodox” and “heretical” manuscripts sought by a *theological* researcher may require literary criticism to ultimately discern authenticity, and the influences of “groupthink” on personal spiritual experience may draw the *anthropological* researcher to apply sociological criteria.

The very multidisciplinary nature of spirituality as an academic topic precludes adhering to any one discipline’s set of research tools. Of course, historical research, as an example, will adhere to historiological tools in exploring the spiritual phenomenon of interest – but those tools alone cannot take on the burden of determining truth value as modernist sciences presume. Not, at least, if the researcher intends to more fully understand the spiritual dimension under examination.

Before concluding this section, a final point would be good to make. Whether personally *experiencing* or formally *exploring* transformative experiences, there are personal consequences involved. Just as spiritual phenomena must require an *interdisciplinary* approach for better understanding, so too, spirituality researchers do well to recognize their *interpersonal* and *intrapersonal* involvement. This is not just a psychologist’s bias (e.g., Taves 2003) – although the author

self-implicates by making his point (cf., Allport 1955/1983; Gergen 2015). In current research, the human sciences acknowledge the limitations of their “science.” The objective ideal of *replicability* that science came to represent in the modern era was preceded by a long premodern history of its own based on *authoritative pronouncement* and is currently giving over to a postmodern sensibility that *subjective influences permeate all objective* inquiry (Mansager 1998).

This awareness takes on different expressions in the different disciplines and is well represented by Ricoeur’s (1976) attention to how an individual interprets texts. By acknowledging that “the surplus of meaning” (p. 45) in literature is only partly due to the “signification” of the words, and also to the interpretation of the consumer of the words, Ricoeur legitimizes a “science of the individual” (p. 79) the description of which Schneiders (2005) recognizes fits spirituality research completely: “Studies in spirituality . . . aim to . . . investigate the spiritual life as it is and has been concretely lived” (p. 18).

A Summary of Spirituality: Experiencing and Exploring

The final task of this article is to summarize spirituality as experience and as the exploration of that experience. Of course, spirituality has been a subject in the literature since its inception. Paul noted different forms of the spiritual life in communities he had founded as well as those which showed allegiance to other founders (1 Corinthians 1:12). Through all subsequent periods of the Christian era, there have been treatises on the spiritual life. Some of these remain classics that served as guides to possible futures for countless people seeking to live a spiritual life conforming to one or another historical period. Western Christian spiritual writers include Hildegard of Bingen (1098–1179) who wrote *The Book of Divine Works*, Thomas à Kempis whose *Imitation of Christ*, has already been referenced, and John of the Cross (1542–1591) who wrote *Dark Night of the Soul*. Eastern rite Christians also provided oral or written thesis on Christian spirituality: These

spiritual guides include Antony (983–1073) and Theodosius of Kiev (c. 1073) neither of whom wrote lasting volumes yet influenced monastic spirituality throughout Russia; St. Joseph of Volotsky (1439–1515) who wrote *The Enlightener*, a reform-oriented approach to monastic spirituality; and Nicodemus the Hagiorite (1749–1809) “managing editor” of the spiritual anthology, *Philokalia*, a collection of spiritual texts from the fourth–fifteenth centuries BCE. All wrote (or preached and their words were transcribed) about the Christian spiritual path in the manner each experienced and later came to know.

Today none of these tracts would qualify as studies in spirituality by standards delineated in the previous section. However, they each may be considered by the constitutive disciplines to be the provider of the experience of spirituality. For example, depending on the problematic under question, the countless examples of and aids to transformational experience found in *The Philokalia* (cf., Ware and Sherrard 1979) can be examined variously:

Historically inclined researchers could look at all these manifestations of monastic spirituality represented in *The Philokalia* itself to compare each across the ages (e.g., McGuckin 2012).

Theologically inclined researchers could explore the concept of “church” and its association with the monastic assembly as documented by *The Philokalia* (Banev 2012).

Anthropologically inclined researchers might include psychologists who focus on the issue of mental health within monastic spirituality (e.g., Cook 2011); feminist scholars who consider women’s place in the book’s development (e.g., Harrison 2012); literary form scholars who explore the range of literary devices utilized among the 4th–15th Century spiritual masters (e.g., Ugolnik 2016); or perhaps sociologists who look to the contrasts of the law and political movements found in *The Philokalia*’s different chapters (e.g., Witte and Alexander 2007).

Currently, spiritual research studies abound. The rise is a parallel phenomenon of countless disciplines and perspectives of the possible within them. The author is most familiar with the rise in research within psychology and by way of example, notes that spirituality studies have grown steadily since the early twentieth century. Under

the influence of William James's (1902/James 1982), *The Varieties of Religious Experience*, transformative experience was opened definitively to educated lay audiences. The psychology of religion, then, has over a century-long pedigree in grappling with spiritual experiences and connected topics. With greater and greater attention being paid to spirituality's possible pasts, presents, and futures (Glaveanu 2018), the psychological approach now identifies as the "psychology of religion and spirituality" and the American Psychology Association has published a journal by this name, which is now in its twelfth volume year. All this to say that, among the vast assembly of scholarly disciplines, transformative experience along with its documentation and interpretation has certainly stretched beyond the original structures of Christian spirituality. Still, they retain the discernable characteristics of *striving to integrate oneself in terms of self-transcendence toward one's ultimate value*.

Cross-References

- Creative Development
- Divergent Thinking
- Feminisms
- Insight
- Open-Mindedness
- Perspective-Taking
- Possible in Psychology

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State of Consciousness

Daniele Di Lernia
Catholic University of the Sacred Heart of Milan,
Milan, Italy

Abstract

Consciousness is a complex construct that has been defined in different ways throughout history. Among many, Damasio (Philos Trans R Soc Lond B Biol Sci 353:1879–1882, 1998) defined consciousness as the awareness of the self and, in this and many other perspectives, the self and the concept of awareness represent fundamental elements in the definition of consciousness. Moreover, their integration across a multidimensional perception through time allows us to consider consciousness as a nonunitary construct. Indeed, there is no such a thing as a single consciousness but rather several states of consciousness that constantly flow through each others and define the awareness of our self in a specific moment in

time. The entry will propose a historical overview of the concept of consciousness, focusing on two fundamental elements of this construct: the self and the awareness of the self. The entry will then introduce the concept of states of consciousness, which emerges from a non-unitary perspective of the original construct. From a nonunitary consciousness, the entry will present the concepts of dissociation, ecstasy, and trance, considering how these concepts can be reframed outside the Western point of view to trace a path to a transformative self.

Keywords

Consciousness · Awareness · Self ·
Dissociation · Ecstasy · Trance · States of
consciousness

Synonyms

Consciousness; Ecstasy

Definition

Consciousness has been an object of debate across the history of humankind. Several disciplines tried to render the complexity of consciousness, from religion to philosophy and from biology to psychology and neuroscience. And, up today, there is no shared definition of consciousness but rather several interpretations that reflect the difficulty to render something so elusive. Therefore, it should not come as surprise if some authors, in this very long and controversial debate, defined consciousness as undefinable (Perry 1904). Notwithstanding, several attempts of definition have been made and among these, we can find some elements that will help us to better understand the nature of our consciousness.

A very immediate and appealing definition came from Damasio that defined consciousness as the awareness of the self (Damasio 1998). Others as well relied on the concept of awareness and Niedermeyer (1994) defined consciousness as the process of being aware of things, either

within (feelings, memories, etc.) or outside (objects and perceptions) us. Similarly, Koch defined consciousness as the subjective awareness of ourselves and our environment (Koch 2004). Similarly, albeit on a more epistemological perspective, Bisiach (1988) designated three sense of consciousness, moving from the consciousness of nonphysical entities to the consciousness of the phenomenological experience through senses (i.e., sensations, actions, and thoughts), and to the consciousness of our internal states.

All these definitions, which span across different theoretical and scientific frameworks, seem otherwise connected by a common thread and they rely on a fundamental shared concept: consciousness emerges from two distinct processes, awareness and self-perception. And this is the reason why, through history, the search for consciousness has inevitably become the search for the self and the awareness of the self.

In this entry, we will propose an overview of the history of consciousness, exploring the most important theoretical frameworks, moving through the search for the self and the self-awareness. The entry will explore the concept of consciousness as a nonunitary construct that generates different states of consciousness, such as ecstasy, trance, and dissociation. Lastly, the entry will explore the possible of consciousness.

However, the reader should always consider that, ultimately, the complexity of consciousness will always elude definition because “consciousness is not a simple function of the mind, but its organization” (Maldonato et al. 2018, p. 357). Consciousness would be an emergent propriety of a distributed system across different functions and this intrinsic characteristic opens the Pandora’s vase of the human mind, enriching a difficult search for consciousness with the arduous task to find the origins of the self and our self-awareness.

History of Consciousness and Theoretical Approaches

Considering the proposed definitions and how they rely on the concept of awareness and self,

we must not forget that even a simple statement such as the one from Damasio entangles a profound degree of complexity because it requires itself a definition of both awareness and self. This complexity is not only a matter of epistemology, biology, or science, but it is also the results of the historical and linguistic processes that, through the centuries, tried to define consciousness in a tireless search that was bounded by the simple fact that consciousness is a complex construct with infinite facets.

On this regard, Damasio himself noticed a peculiar distortion that underlines all the conversations that connect consciousness and awareness. The root of this relationship might, at least partially, reside in the language used. English, for example, distinguishes between consciousness and awareness, postulating two semantically different constructs, which therefore need to be further defined and at least partially differentiated. Conversely, Latin languages do not operate this distinction, and a simple word “*coscienza*” (from the Italian) describes at the same time the consciousness and the awareness. This linguistic digression suggests how, at least partially, dwelling in the concept of awareness aiming at defining consciousness is the results of historical and linguistic perspectives that shaped the view and the relative theoretical frameworks of many scientists. Bosinelli (1995), for example, defined three types of awareness, each one of them built upon the previous one (i.e., awareness of phenomenological objects, meta-awareness – as an awareness of being aware of, and self-awareness – as an awareness of our self), further indicating how a language can divide, connote, and separate different aspects of something that was originally united.

However, if language and history tried to separate the different faces of a singular unit, philosophy, neuroscience, and psychology tried – paradoxically – to put together again what was divided and several theoretical efforts tried to render the complexity of the consciousness.

Picton and Stuss (1994) suggested that consciousness may involve and require some sort of modeling, anticipatory processes that create models of the expected world, constantly

adapting ourselves to these models rather than perceive a pure perception. In this view, consciousness would be another model of ourselves, our world, and our presence in this world. A model of being self-aware is constantly built and self-aware is constantly built and updated by the brain with new information. Parallely, Damasio identified and defined two kinds of consciousness: a core consciousness and an extended consciousness (Damasio 1998). Core consciousness is the product of a transient process that does not require language or memory, and it is more related to short-term processes of memorization, perception, and awareness. Core consciousness is therefore built upon two other elements, a transient core self and a transient awareness. Conversely, the extended consciousness required a quite complex characterization integrating an autobiographical self that is a function of our self-awareness through time merged in a coherent narration that ties together the ability to recollect the past, perceive the present, and foresee the future. Everything combined in a coherent meta-representation through language and time, ultimately creating our very sense of self. Damasio elegantly illustrated this point when he defined the two fundamental axes that constitute the research on the human consciousness: the temporal dimension – namely how the brain creates an infinite flow of perceptions temporally and spatially unified – and the dimension of self – namely how the brain creates a sense of self, a reflective surface that encompasses all our perceptions in a coherent unit that belongs to us, that defines us, and that is us (Parvizi and Damasio 2001).

The search for the self was long due, from James' declination of physical, mental, and spiritual self (James 1984, 2013) to the modern neuroscientific models of self-consciousness. It is an arguably impervious task to render the complexity of a topic so dense and its infinite constellations of theoretical approaches. Metzinger proposed an extensive compendium of this search from which we can draw a simple and powerful conclusive fact. There is no such thing as a self. "Nobody ever was or had a Self" (Metzinger 2004). The fundamental propriety of

self is nothing more than conscious self-models that, nonetheless, are not recognized as models. This simple statement holds a disruptive message; our consciousness is not a unitary element that exists per se. Rather, it is emergent propriety of a complex system that constantly creates an infinite permutation of its own states, becoming aware of these very states. And these states are our states of consciousness.

States of Consciousness, Ecstasy, Trance, and Dissociation

Albeit the concept of a nonunitary consciousness that does not exist per se endangers the human ego, which gravitates around the desire to be utterly unique, recent evidence from neuroscience (Craig 2002, 2009) and the computational Bayesian models of mind (Friston 2009, 2010) supported Metzinger's idea. Integrating these different perspectives, we began to understand that the emerging processes that create our consciousness rely on the experience of "being someone." An innate, immediate, experience is that we constantly live from the moment we are born and, nonetheless, we struggle to completely understand despite the immense effort science has dedicated to this very goal.

Being someone is arguably innate propriety of being alive; however, this conscious experience has different aspects, like a stone carved with an infinite number of faces, each one with its one unique reflection. Emerging sensations from the body, our emotions, our thoughts, and our memories, each of these specific domains constitute a necessary element of the self and the self, as we have defined, constitutes the ground upon which we can create consciousness.

A concept that often recurs in the field of consciousness is the concept of altered state of consciousness as the natural and unnatural variations of the awareness of our self-perception.

The study of the altered stated of consciousness has perhaps a longer history than the research for consciousness itself, because the natural occurring deviations from our coherent day life

often captured the interests of many, from researchers to scholars, from doctors to saints.

Several definitions addressed this topic, some of them integrating a poetic and cultural perspective through the concept of *trance* or *ecstasy* as originally explored by Eliade (1964). Others utilized a psychological perspective with the construct of *altered state of consciousness* as proposed by Wallis (2003). In modern times, several definitions exist and among them, the concept of modalities of nonordinary consciousness proposed by Comba (2014) represents the most appealing framework. Under this umbrella term, consciousness is described as a flow of mental states in which awareness can oscillate and can vary naturally across time. In this constant stream of consciousness, some states are more ordinary – and recurrent – than others, while others manifest themselves only in particular occasions. However, these particular occasions are not necessarily tied to a traumatic or negative event, and the mind itself can oscillate frequently between different levels of consciousness that move from pathological states to highly functional ones that we see in the transformative experience or the moment of profound insight, passing through the daily altered states that every each of us experience when dreaming with open eyes or when we have no precise recollection of an action that we just did.

However, all the definitions proposed suffer from a fundamental problem, and they fail to specify the elements and the systems that constitute the altered states of consciousness. The ecstasy (or trance) in Eliade's view (1964) can indeed assume a variety of forms and different declinations. Moreover, it can be reached or induced by an equally large variety of methods that can alter our consciousness, projecting the individual in a different state of mind.

In Eliade's view (1964), the concept of ecstasy is more like a superordinate term that contains a multiplicity of variations, each of them with unclear boundaries. And this applies to all the other conditions as well.

This extreme ambiguity brings as a consequence the covert absence of comprehension from one side and an excess of stereotypization

on the other side. When we think about ecstasy or trance, we usually imagine some extreme declination with profoundly marked traits as the one we see in films and anthropological documentaries. Nonetheless, it would be a capital error to consider the altered state of consciousness, or ecstasy/trance itself, only in relation to the extreme displays that we know from the literature or the fiction.

The ecstasy or trance does not assume, indeed, only the extreme manifestations that we see in religious stories about the lives of saints. Neither they can be exclusively defined by those dramatical and theatrical possessions that we admire on the anthropological section of the history channel. Neither, again, they can be relegated to those particular states of consciousness that result from the consumption of intoxicant substances.

Therefore, aiming to bring more clarity stream of notions and definition, it could be useful here and now try to redefine the concept of states of consciousness, ecstasy, and trance. This process will help to reach a better comprehension of the terms introduced, evaluating how these constructs could be better defined by adopting the concept of *dissociation*.

Nonetheless, to do so, we must open ourselves to the *possibility* of a different perspective.

In psychology, the term dissociation has a specific and defined valence and, notwithstanding its ability to vary across different theoretical paradigms, it usually indicates a mechanism where specific psychological states of consciousness can separate and detach from each other or the mainstream of consciousness. This process, which can present itself often in a temporary manner and more rarely in a permanent way, can bring therefore an interruption – a break – in the ordinary flow of consciousness within the individual's psychological universe.

From this point of view, some definitions can shed light upon the concept of dissociation that can be in general:

designed as a distortion, a limitation, or a loss of the normal associative connections with a concomitant incongruency between an idea and the other, between ideas and emotional resonance, between

the content of our thoughts and our behaviour, where we can read at the same time a separation and an arbitrary connection between different elements of the psychic life. (Galimberti 1992, p. 849)

Similarly, Rondal Laing with his peculiar phenomenological conception described the concept of dissociation as a particular state of consciousness where “an individual, even in ordinary circumstances, can miss the sense of temporal continuity, or the sense of his personal coherency. [...] Can feel his self partially disjointed from his own body” (Laing 1990, p. 50).

However, for Laing, the dissociation was a pathological (schizophrenic) defense mechanism to an ontological insecurity in which an individual failed to positively integrate his or her sense of self and self-awareness, leading to a disruption in his perceptions. In this dissociated state, the mind is, at the same time, trapped inside the body but without the ability to perceive the body and the outside world as it own, leading into a disembodied perception where everything – including ourselves – is not real.

This must remind us that, albeit these definitions can open several different interpretations, in the Western societies, it remains difficult to detach the concept of dissociation (or different states of consciousness, or trance, or ecstasy) from the field of psychopathology. Because, for the general biomedical paradigm, any shift from the ordinary flow of consciousness is generally considered an aberrant functioning of an otherwise coherent mind.

The Possible of the Consciousness

Notwithstanding what has been said so far, it is of paramount importance to open to the possibility that a biomedical and psychopathological approach cannot render the complexity of human mind.

As stated, Western biomedical approaches often interpreted pathologically the different states of consciousness that exceeded the ordinary functioning. If these different states have been interpreted as a curse or a gift in the past,

nowadays the biomedical framework tries to categorize everything out of ordinary under the concept of dissociation, as a separation from the ordinary – and coherent – mind.

Nonetheless, evidence from neuroscience and experimental psychology (Di Lernia et al. 2016, 2018; Riva et al. 2017) suggest that our mind is a probabilistic system that constantly generates infinite permutations of our existence, of our perceptions, of our actions, and of our futures selves (De Ridder et al. 2014; Friston 2009, 2010; Friston et al. 2014, 2016; Ondobaka et al. 2015; Pezzulo et al. 2015). In this generative system, within an infinite flow of consciousness, different mental states succeed each other without continuity and interruptions, moving from the ordinary states of consciousness that we can easily define, to the ones that rarely touch our awareness (Adams et al. 2013; Edwards et al. 2012; Friston et al. 2012). These states of consciousness can dissociate from the ordinary states of the mind and, at the same time, create a new association between thoughts, feelings, memories, dreams, and hopes.

Although it is certain that crystallization of a dissociative state of consciousness can lead to a psychopathological state, it is equally true that – in most of the occurrences – different states of consciousness, dissociation, and even ecstasy and trance represent elements of our daily life that congruently fit in the common mental experience of every individual, without necessarily reaching any pathological condition.

Ecstasy, trance, and dissociation should not, therefore, be intended as discrete states, as a rigid expression of two opposite states of consciousness, the healthy and the pathological one. They should be better intended as an element in a continuum that moves from the ordinary modalities of functioning to the extreme cultural and psychopathological evidence that is reported in the anthropological and medical books.

The human being experiences different states of consciousness, small dissociative episodes and even ecstasy and trances every day and, during his or her entire existence, are described by different grades of intensity and forms. They could be the incredible images that appear in front our eyes

before falling asleep, or when we find our self-mind wandering without a precise recollection of the minutes before because we were completely absorbed in our thoughts, or, again, when we experience a moment of pure joy and awe in front of something beautiful and yet unsettling, or again when we are completely absorbed by a work we are doing in a sort of flow of consciousness that excludes everything around us.

Opening up to the possibility to consider dissociation, ecstasy, and trance as naturally occurring elements of our consciousness, without a psychopathological connotation, leads us to the concept of the optimal zone of consciousness (Di Lernia 2014).

Specifically, the optimal zone of consciousness represents a psychophysiological space where the dissociative and altered states of consciousness are equally balanced in a proactive manner with the ordinary consciousness, in a way that allows a hyperfunctioning of our cognitive and affective systems. Examples of these states are the experience of flow and awe (Chirico and Yaden 2018; Triberti et al. 2016), which can either bring us to the verge of a powerful insight (Chirico et al. 2018) or an incredible focus toward our self or the task at hand. At the same time, the optimal zone of consciousness can represent a state of possibility, a specific cognitive region of space and time when we can enact profound transformations regarding our cognitive beliefs, our self, and our emotions, leading to real transformative experiences (Gaggioli et al. 2016). However, by definition, the optimal arousal zone is a non-ordinary state of consciousness and, therefore, it is difficult to reach, to maintain, or to induce. Eliade (1964), arguing about trance and ecstasy, highlighted how shamans and healers underwent a complex and difficult training to gain knowledge of their dissociative states, ultimately learning how to balance and control them to create a space of optimal performance. Balancing the consciousness and the self-awareness with the dissociation is, practically, balancing the consciousness with the loss of consciousness, trying to reach a specific point where the boundaries are permeable to self-transformation, without otherwise lose ourselves.

This, inevitably, requires intense training or some sort of external guidance, as in non-Western societies (Eliade 1964). However, and before all, it requires us to detach to the Western conception and start considering our consciousness and its possible variations as useful instruments to a transformative self. Because consciousness is a state of possibility, it is the realm of what can be considered possible and therefore should not be confined or labeled but rather accepted in all its extension.

Conclusion

In conclusion, human consciousness is an incredible instrument of the possible. Its infinite permutations connote our daily life in a manner that is sometimes difficult to coherently render. Different definitions and paradigms tried to coherently frame the sense of consciousness, moving through the self to the awareness of the self, from the ecstasy of the shamans to the pathological conditions of the Western clinical perspectives. However, this narration tells us that consciousness is still a complex and largely undiscovered realm that should be approached with a sense of possibility, with a considerate understanding of its natural variations, its different states, and how these states create the powerful experience that is the human life. Because consciousness is an experience so unique and incredible that is composed of both from ordinary elements and extraordinary events that contribute, together, to define the essence of our very existence.

Cross-References

- [Awe](#)
- [Dreams](#)
- [Ecstasy](#)
- [Emotion](#)
- [Flow](#)
- [Here and Now](#)
- [Hope](#)
- [Insight](#)
- [Psychopathology](#)

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Stochastic Error

► Error

Storytelling

Anete Mikkala Camille Strand
Department of Communication and Psychology,
Aalborg University, Aalborg, Denmark

Abstract

This chapter aims at clarifying in what ways storytelling connects to the possible, both the notion of possibility and to the discovery of new possibilities. The connection is depicted more specifically through two strands of storytelling known, respectively, as *Living story* and *Material storytelling* and exemplified by a specific method OT/Sandboxing. Overall, storytelling as a practice entails both memory work, meaning making and imagination and draws on experiences as well as available cultural and material affordances to act as both reference-points and creative building blocks in figuring out what is and could be happening in any given situation. Storytelling, in general, denotes the mundane endeavor of making sense of something through storying. It inevitably also involves placing bets on the future that enables the storyteller and the partakers to make sense of not just the present and the

relevant past but includes making sense of relevant next steps in order to act meaningfully. A manner of grasping or figuring out what *is* before you, what *has been*, and what *could come*. In the dynamic of this threefold lies the possible and the discovery of new possibilities. Each moment of storying is a moment of invoking the world yet again and the story dynamic thereby offers the possibility of resistance to what is and can be.

Keywords

Storytelling · Living story · Possibility · Material storytelling · Field of possible becoming · OT/sandboxing

Introduction

This chapter aims at clarifying in what ways storytelling connects to the possible, both the notion of possibility and to the discovery of new possibilities. The connection is depicted more specifically through two strands of storytelling known, respectively, as *Living story* and *Material storytelling* and exemplified by a specific method OT/Sandboxing. Overall, storytelling as a practice entails both memory work, meaning making and imagination and draws on experiences as well as available cultural and material affordances to act as both reference-points and creative building blocks in figuring out what is and could be happening in any given situation. Storytelling, in general, denotes the mundane endeavor of making sense of something through storying. It inevitably also involves placing bets on the future that enables the storyteller and the partakers to make sense of not just the present and the relevant past but includes making sense of relevant next steps in order to act meaningfully. A manner of grasping or figuring out what *is* before you, what *has been*, and what *could come*. In the dynamic of this threefold lies the possible and the discovery of new possibilities. Each moment of storying is a moment of invoking the world yet again and the story dynamic thereby offers the possibility of resistance to what is and can be.

The discovery of possibilities lies at the core of the action because storytelling also includes making some things matter and others not (in both sense of the term) as what is emphasized and included in any given moment of storying constitutes a field of possibility where some actions become meaningful and others not.

The chapter clarifies these connections throughout three parts. *First*, a clarification of how storytelling draws on the linguistic turn as well as how it relates to and embarks from narrative research. This leads to an introduction of the notion of *living story* and its inspiration from Tamara play – LA's longest running theater play. Here the notion of *antenarratives* is introduced, which closely relates to how possibility is understood and discovered as well as the employment of new possibilities in storytelling actions.

Second, the material, (quantum) turn upon living story is introduced in terms of how it emphasizes possibility as a *meaning-matter entanglement* emerging in *the appeal of the present*. The part clarifies how this enacts a *field of possible becoming* involving the renewal of time, space, and meaning as an enfolding of *spacetime-mattering* within the acts of storying. This clarification then forms a bridge to remark on the acknowledgment of matter and the active employment of material artifacts in storytelling settings.

Third, the chapter zooms in on a specific method OT/Sandboxing, which has been developed within the material turn upon the living story “tamara” approach. This part exemplifies how more precisely the field of possible becoming is invoked as a *configuration* by the material affordances of the method and how this affords the play with the renewal of time, space, and meaning as a meaning-matter entanglement. Here an example of such a storytelling endeavor is included stemming from a design workshop among Experience Design students at Aalborg University in Denmark.

The Linguistic Turn and the Emergence of Living Story

The linguistic turn is absolutely central in comprehending the connection between

storytelling and the possible, because the turn toward emphasizing the performative significance of language and discourse freed the teller from being captured in closed stories of history and opened possibilities for diversity and polyvocality (Molly & Jørgensen 2016, Boje & Sanchez 2019). It gave the teller and partakers of the stories the means to step outside the narratives at hand by paying attention to discursively imbedded perspectives that would otherwise entrap them (or others) in specific roles and identities and courses of actions. The linguistic turn is thus a natural departure-point in depicting both the founding characteristics of the living story approach, and how it came to be possible as a turn upon the more classical humanistic, and even folkloristic, narrative approach (led by Poul Ricoeur), into a linguistically informed liberating story approach that at its core holds the possibility for many outcomes.

The Linguistic Turn

The Linguistic turn was carried out from the middle of the twentieth century by two prominent strands; a critical, poststructuralistic, meaning- and power-oriented approach led by prominent figures such as Michel Foucault, Mikhail Bakhtin, and Jacques Derrida through their work on genealogy, heteroglossia, and deconstruction, respectively, as well as an approach more closely focused on the language use, per se, by prominent figures such as Ludwig Wittgenstein and John L. Austin in their study of language play and pragmatic language use of speech-acts, respectively. Two strands that are still struggling to come to terms with the nature of discourse and language and the role of action and power within language use.

Regardless, the book “How to do things with words” by Austin (1955) is widely recognized as marking a turn in the understanding of the endeavor of talking from a descriptive one to a performative one. Talking wit from being understood as merely describing or conveying the actions of the world as it is, into an understanding of talk as performative action, an action that did something to mark the courses of actions of this world. While both strands catches on to this notion

of performativity Erickson (2004) highlights that the difference between the two strands can be summarized in terms of whether or not the conduct of talk in local, social interaction are conceptualized as profoundly influenced, and thus mere actions of puppets of larger discursive structures (the critical theory argument), or understood as performative utterances by social actors in their own right doing actual, and unique things with words and signs that mattered for the ongoing social interaction in the situation (the language-in-use approach).

All these reconceptualizations of how discourse and language-use matters in the construction of meaning are cornerstones in understanding both the linguistic turn within storytelling, and understanding how the possible relates to storytelling, because it was under these various influences the living story approach emerged in 1991 by narrative inquiry researcher David M. Boje (1991), through his attempts at documenting his empirical studies of language in use as storytelling. Like no other scholar within the field of storytelling Boje has been occupied with understanding precisely this dynamic of emerging possibilities for renewal within the process of meaning-making.

The Emergence of the Living Story Approach

Until then stories had generally been understood as the act of making sense of what has been through narrative emplotment. While Boje acknowledged retrospective sensemaking, his empirical findings let him to claim that stories were tersely told, never whole and being told differently across contexts (Boje 1991). To him real life stories seemed more as bits and pieces put together and serving the purpose of making sense in a situation allowing the teller to navigate possible next moves:

... experience are recounted socially throughout the firm to formulate recognizable, cogent, fensible and seemingly rational collective accounts that will serve as precedent for individual assumption, decision, and action. ... Although individuals are limited information processors, each person retains a part of the storyline, a bit of interpretation, story performance practices, and some facts that confirms a line of reasoning. ... (Boje 1991: 106)

Boje concluded that stories, contrary to the general understanding of narrative as a whole-some, temporal plot, are living and everchanging. Hence he coined it *living story* and to further emphasize the living, open-ended dynamic of these storytelling actions he developed the term *ante-narratives* to depict the vital, subtle element of *ante* as counter to the finite *post-understanding* as part of the Beginning-Middle-End (BME) structure claimed by the main figure within narrative research, Paul Ricoeur (1984), and his followers within organizational storytelling (such as Barbara Czarniawska (1997, 2004) and Yannis Gabriel (2000).

Ante, then marks both the subtle openings performed in stories for other possible outcomes and the bets on the future that tellers thereby seem to place in and by their stories. In effect, this orients these stories toward a vast number of possible futures, and enable them to resist or outright oppose the dominant, formal narrative. Ante-narratives emerge then as a field of possibility – the possible, by employing other bits and pieces of fragments of experiences as possibilities of becoming in their storytelling actions. A renewed field of possibility through emerging ante-narratives as traits of what is yet to come (Strand and Henderson 2019: 125).

Freeing Storytelling from Narrative

By these claims David Boje (1991) broke new territory and disturbed the peace within narrative research in his famous Administrative Science Quarterly article, which he first presented at the Academy of Management conference in 1991. A presentation that led to a break-out of scholars from an otherwise solid group, and the founding of an alternative conference format coined as sc'MOI (standing conference for Management and Organizational Inquiry), which held its twentieth anniversary in Philadelphia in 2011. The new group took on the identity of the naughty kid-brother of the dominant Academy of Managements narrative inquiry group of scholars that were still holding Poul Ricoeur's work (Ricoeur 1984) on Narrative and Time in high regard (for example, Czarniawska, Gabriels, etc.).

First Amendment:

*“An Emphasis on **Performance**: Be it resolved that Ricoeur’s position on narrative and time needs to be expanded to consider the context or space of narrative performances. We are not studying already constructed narratives, rather, narratives are performances in the moment.”*

(Cunliffe, Luhmann and Boje, 2004: 272)

Second Amendment:

*“An Emphasis on **Multiplicity**: Be it resolved that perpetual referring within the threefold mimesis occurs across past, present, and future time and contexts, resulting in multiple threads of earlier narratives (M1) weaving together into multiple present emplotments (M2), and continually recreating multiple futures (M3).”*

(Cunliffe, Luhmann and Boje, 2004: 273-274).

Storytelling, Fig. 1 The two Amendments to Ricoeur’s threefold mimesis

The living story group later (in 2004) formalized its rejection of the general take on narrative in two amendments to Ricoeur’s work (Fig. 1).

In co-work with various colleagues, (e.g., Cunliffe et al. 2004, Boje and Durant 2006, Jørgensen and Boje 2010) and over the course of the years, Boje refined his take on narrative research to “free” storytelling practices from being “stuck” in a general narrative of BME linearity (Boje and Durant 2006). And, importantly, in a manner that would at the same time enhance the complexity of the story practice to the benefit of possibilities of many story lines. The main inspirational sources for this rework of narrative research were Sartre (Temporal multiplicity), Derrida (Deconstruction), and Bakhtin (Heteroglossia) – all prominent figures of the linguistic turn.

Boje’s living story approach thus emphasized performance and multiplicity, respectively, and came to understand storytelling holographically as a constant dance or a tension between retrospective-narrative-sensemaking, the immediate presentness of living-story-relationality or contextuality, and the prospective-antenarrative-sense-shaping. The latter marks the frontiers of the possible *new or next*. Hereby Boje constructs a nonlinear, tripart arrangement across past, present, and future. Depicted in the model below is a version from 2011 (Fig. 2).

Next, a brief encounter with another vital part of the connection between storytelling and the possible.

The Tamara-Land of Storytelling: A Land of Possible Becoming

In framing what Boje had seen in everyday storytelling endeavors as *Living story* Boje took on a mundane inspiration from Tamara play 1981 by



Storytelling, Fig. 2 Boje (2011)

John Krizanc regarding the Polish painter, Tamara de Lempicka’s historical meeting with the Italian poet Gabriele d’Annunzio. It became the longest running theater play in LA in the 1980s – most likely due to the play’s manner of completely disrupting the theater experience by using an entire mansion as its stage design. This meant that scenes would take place simultaneously throughout all three floors and the audience would need to follow one, and not some other actor, and subsequently make choices who to follow next. Hence, no two persons would experience exactly the same play as they were forced to continually put together fragments they had picked from the scenes they witnessed in the order to comprehend what was going on. A bet that could soon be altered. During the break in the theater play the audience would exchange ideas and bets with even further possibilities for alternating courses. Numerous amounts of storylines would thereby be created across the board of the audience, and they were invited to come back time

and again and experience the play anew in a different order. A discontinuous threefold dynamic of grasping or figuring out what *is* before you, what *has been*, and what *could be* and with new possibilities continually emerging.

Boje expanded on this fundamental rule of the Tamara play to count for real-life storytelling actions of all types and referred to them as “Tamara-lands” (Boje 1995) and in effect they were living story landscapes of terse, nonlinear, and open-ended storytelling, privileging a telling of otherwise untold stories, as each new teller potentially edits the originally performed story through their particular collection of fragments to which they insert their own experiences, characterizations, and/or emplotment (Lundholdt & Boje 2018: 21).

With the Tamara play story becomes both polyvocal and embedded in buildings, rooms, and landscapes of the spatial and temporal shifting contexts: *“Tamara-land raises the specter of the ‘socio-material’ against the naïve fantasy that storytelling is situated in one room, at one time, with all participants in the role of passive audience. This raises the theoretical concern for the ambiguity and uncertainty of storytelling spread out spatially in different rooms (and corridors), different floors, different buildings, and within those sites, at different times”* (Lundholdt & Boje 2018: 21–22).

As it happens Tamara play thereby constitutes a useful bridge to comprehend the material turn within storytelling and how that turn qualifies for an even more complex understanding of the possible and the play of emerging possibilities within storytelling.

The Material (Quantum) Turn upon the Linguistic Turn to Story

The material turn envelops a range of turns toward the physical, bodily, and biological realm. Other names for this turn is the embodiment turn, ontological turn, and the spatial turn (see, for example, Julskjær 2009). Feminism, and the development of new materialism has been a driving force of this turn, and undoubtedly the work of Karen Barad (2003, 2007) has influenced the move most profoundly. This is due to a turn not just toward the material as the name would indicate, but a turn

toward the entanglement of matter and meaning, and as such a turn toward dissolving two of the most profound pillars of modern thinking – that of absolute exteriority, or individuality, and that of the Cartesian split between thinking and the materialized.

Storytelling as an Entanglement of Meaning-Mattering

While the living story approach, through the two amendments (Fig. 1), still grant the human actor the center role: *“the origin of agentic actions and the prime authors of meaning and identity”* (Hultin and Mähring 2016: 2), as well as acknowledges that human subjects are imbedded in material surroundings and use material artifacts as sensemaking devices, the material turn brought on a call to go beyond viewing meaning-making as episodic, human-centered, and (inter)subjective and reorient toward a more holistic understanding of the messiness of meaning-mattering (Strand 2014a; b; c; Poulsen and Strand 2014).

A call that manifests yet another amendment to storytelling theory, this time around though, it is an amendment to the living story approach and an amendment, which at one and the same time reconfigure the relation between meaning and materiality (and in doing so disrupts the Cartesian split) – and allows time and space, respectively, both a co-constitutive and a co-constituted role in the processes of becoming, and thus in the framing of the possible.

The Quantum Amendment

An emphasis on **meaning-mattering**: be it resolved that Boje’s position on living story needs to embrace quantum entanglement on the expense of absolute exteriority and human-centeredness, respectively, and thus acknowledge the mutually, co-constitutive role of meaning and matter in the enfolding of spacetime-mattering. (Strand 2014a, b, c: xxx)

The Complexity of the Emergent Moments of Storying

The theoretical quantum physicist, Karen Barad is a prominent figure within the material quantum turn in storytelling and in the framing of the quantum amendment. Her theory of Agential Realism (Barad 2003, 2007) employs a radical take on emergence in meaning making (thus in

storytelling actions) than that of the antenarrative dynamic of living story. Emergence here entails meaning-mattering and the becoming of the world yet again through a *between-field of possibility* that is actualized in the storytelling moment through a vast amount of entangled agencies. These agencies are integral parts of an *intra-act* in the sense that they themselves get their unique significance – become – as “something” in the very same moment as they exert their influence within the story intra-act. This means that time, space, matter, and meaning are considered both co-constitutive forces (an entangled agency) and co-constituted definitions (an emergent becoming) in the very act of *meaning-mattering*. Barad coins this emergence an *enfolding of spacetime-mattering*; a unit of the real that matters in both senses of the term. Until the very moment of storying, all elements of the real are indeterminate (yet, not without causality). Hence, the storytelling act is an act of *worlding* where also time and space come to matter, which also means that time and space go way beyond being mere external measures:

...time and space, like matter and meaning, come into existence, are iteratively re-configured through each intra-action, thereby making it impossible to differentiate in any absolute sense between creation and renewal, beginning and returning, continuity and discontinuity, here and there, past and future. (Karen Barad 2007, Preface)

This is an understanding of emergence that basically entails a past that never was, a now that is not only here-now, and a future that will not simply be. The threefold of time, so well known from storytelling and narrative research, is here enacted as a rather complex (re)enfolding or restorying act through the *appeal of the present between* in the very moment of storying. In other words the present *between-field of possibility* matters for how stories enfold and what possibilities emerge (Fig. 3).

Thereby any moment of storying is a between field of possibility that automatically restories both the past and the possible future as it attempts at figuring out the now. An enactment then of a field of possible becoming, where the emerged antenarratives are the traits of what can



Storytelling, Fig. 3 A moment of storying. (Strand 2012)

possibly become. (Strand and Henderson 2019: 125).

In that sense the field of spacetime-mattering is a *between-field of the possible*.

Scenarios as an Agentic Storytelling Partaker

Spatial elements are an important entangled part of this field of possible becoming of any storytelling moment. Not just as context or as situated action as a living story, but as co-constituent agency to be acknowledged and reckoned with. Partly because these storytelling moments take place somewhere, which functions as *affective sites of engagements* (Strand 2012, 2020), where the agency of the place entails the materials, colors, shape, temperature and air quality, arts, and symbols in general, etc., of this place. And also because the particularities of the site of the storytelling action becomes an agentic part of a scenario that weave in other scales of times and places through memory rework of past and future experiences:

Each scene diffracts various temporalities within and across the field of spacetime-mattering. Scenes never rest, but are reconfigured within, dispersed across, and threaded through one another....Multiple heterogeneous iterations all: past, present, and future, not in a relation of linear unfolding, but threaded through one another in a nonlinear enfolding of spacetime-mattering, a topology that defies any suggestion of a smooth continuous manifold. (Barad, 2010: 240)

As sites of engagement these scenes affect partakers differently and triggers both memory-work,

cultural knowledge, and imagination as part of the ongoing meaning-mattering of the emergent story process. All partakers – human and other than human – of any such between-field are understood both as materials being woven in a certain way – hence, enacted as *something* – and agentive coauthors of the story through that particular enactment, which could have been different.

So while stories are constructive attempts of figuring out what is going on, they are at the same time a very real, living act of allocating what matters and what doesn't seem to matter. And in that sense the process of enfolding of a story is a very real construction of a *field of possible becoming*. A formative occasion (Hultin and Mähring 2016) in the sense that meaning materializes as both choices and form. Meaning becomes *mattered*, so to say, and in doing so a unique field of possible becoming will have emerged that could have been different.

That way the story is being woven as a unique, emergent enfolding, neither true nor not true, just what became in that particular moment given the play with a very particular *between-field of the possible*. An enfolding that also holds the possibility of grasping places and our relations to them anew as sites of our actions to come.

Material-Based Storytelling as an Act of Worlding

The living story approach coined as Material Storytelling (Strand 2012) quite literally work with such meaning-mattering by building actual *meaning-matter tamara-land configurations* through placing figurines on storyboards with sand. These affordances enable the participants to comprehend their experiences in a story format by placing, sorting, and reworking fragments of their experiences, and in doing so placing matters of importance, as well as their bets on relevant next steps and thus play with the field of possible becoming. Through literally materializing the between-field of possibility, each moment of working out this story becomes a moment of invoking the world yet again from the rework of the included parts.

Below follows an example of using this miniature world-building storytelling practice. The specific method is coined as Object theater (OT)/Sandboxing (Strand 2014a; b; Strand & Sparholt 2017, Strand, et.al. 2018, Strand 2021) and are the central story platform of the Material Storytelling methodology (Strand 2012), which has been part of the study programs across the Department of Communication and Psychology at Aalborg University in Denmark since 2012.

The Worlding Engagement of a Restorying Act

The following case-example is from a learning setting of Experience Design students at Aalborg University. The students are working on a redesign of a particular building situated in the midst of an industrial complex from the early twentieth century, which a local entrepreneur has envisioned as becoming one of the top ten “must-see” tourists sites of Europe. One that puts Aalborg on the worlds map and at the same time brings an international flair to the city. The plan is to fuse the old industrial buildings with modern, newbuilds to enact a city within the city. “Cloud City” is to have a large, fixed art piece by Saraceno as the centerpiece and main attractor. The art piece consists of 12 glass cubes forming a 30 meter tall construction that visitors can walk through and get a sublime overview of the city of Aalborg and its natural surroundings (Fig. 4).

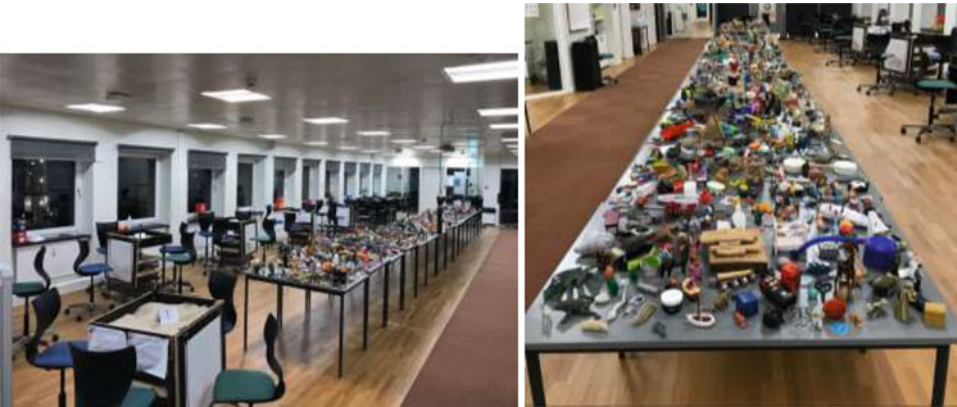
Bearing this grand vision in mind, the task given to the students at the offset of the design-course was to come up with a design and a purpose for one particular building named “Malteriet” (encircled) as a unique and distinct part of the Cloud City complex.

The Miniature Worldbuilding Scenario

The OT/Sandboxing workshop followed after on and a half week of lectures, and 1 week of empirical fieldwork in and around the site. The students were invited into the storytelling lab fashioned with a large buffet of figures of all kinds and surrounded by storytelling platforms – one for each group of students. A field of possibility for configuring a common story of a shared task and challenge (Fig. 5).



Storytelling, Fig. 4 A mock-up of the vision of the Cloud City complex (part of case presentation for students 14 Oct 2020)



Storytelling, Fig. 5 Photos of the storytelling lab organized for the event

The basic idea of the OT/Sandboxing method is to employ a wide variety of material objects as configurative elements and as prompts for memory work of cultural and personal experiences to feature in as part of a creative, storytelling process. In the words of Haraway: “*Figures collect the people through their invitation to inhabit the corporal story told in their lineaments*” (Haraway 2008: 4). A figure then is a memory-device (Middleton and Brown 2005) that together with other such figurines configures a miniature Tamara-land of possibility within the frame of the sandbox. A

platform through which the story then emerges via the storytellers play with the antenarrative cues found in the lineaments of the figures, respectively, and in the lineaments across the entire configuration. Also the emplacement then in relation to each other becomes vital, antenarrative cues to interpret, experiment, and play with as the story takes shape and morph into being in the meaning-mattering process.

This method is useful in helping to navigate and comprehend the vast amount of impulses, information, and impressions that characterizes



Storytelling, Fig. 6 Photos from the living story session in material story lab 14 Oct. 2020

the fuzzy front-end of creative processes (Sanders and Stappers 2008), and in dealing with “wicked problems” (Buchanan 1992) as it affords the platform for the partakers to creatively negotiate a common ground for their co-work through enacting a common story of what challenges and possibilities concern the case and what ideas and criteria should be the core of the design.

After being designated a sandbox, the various groups of design students are given the instruction to let themselves be “invited” to choose among the “lineaments” of the vast amount of figurines on the buffet to embody important fieldwork experiences as well as their background knowledge of the case. While selecting figurines, all group members will silently go back and forth between placing figurines within the sandbox and selecting more from the buffet, and as such a common *tamara-land* of possibility slowly emerges in the sandbox, across bits and pieces of memory fragments among the group. In order to keep the *antenarratives* “dancing” off the lineaments, and exploring the possibilities of the configuration they are instructed to keep asking each other the question: “what else could it be?”. A deliberate invitation to reorient toward other *antenarrative* cues (Fig. 6).

Below is an example of such a material-based, emergent story process.

Eternal, Joyful Change: An Example of a Miniature Tamara-Land of Possibility

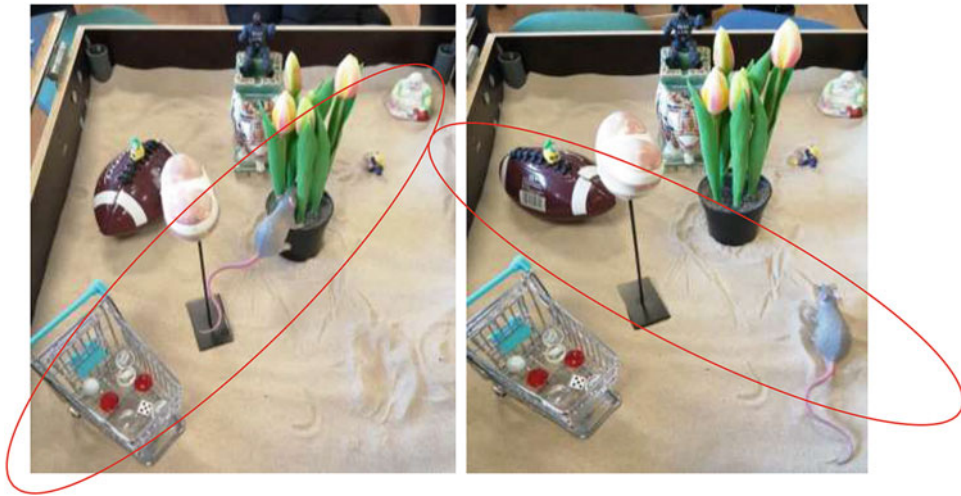
Contrary to the fixed, see-through art centerpiece of Cloud City, the lineaments of the following example of a sandbox configuration (Behnke and

Nielsen 2020) invoked a story about adding a motor of variety to enable a multiplex of stories to be constructed across the vast variety of visitors – local and foreigners – upon visiting Cloud City. What started as a simple idea of creating a site for a shopping experience turned during the meaning-mattering process into a rather impressive and sophisticated viral branding-concept.

The two photos below encapsulate the play with the miniature *Tamara-land* of possibility that the students were building during the workshop. The encircled parts show how the invoked *antenarratives* of the lineaments materialize two distinct storylines during the meaning-mattering of the story process. Each making an opening and a bet on a possible other future of Cloud City. Each making different things come to matter (Fig. 7).

The center of the sandbox configuration contains two figurines; a heart emphasizing it as central for the experience design to touch the visitor’s hearts. And a tulip, which is a seasonal plant depicting the cycles of events as the centerpiece of the design:

As a bulbous plant the tulip became a metaphor for continuous renewal; just like the bulbous grows, slowly becoming a flower and then dies out, whereby the cycle starts anew, the essence of the experience design is the cycle of continuous renewal: The experience starts with a premiere of a themed item, which then lives for a months and then it ‘dies’, then broken down and the whole thing starts anew. This element is to permeate the experience design and be the focus of it. (Students explanation in project report, Behnke and Nielsen 2020)



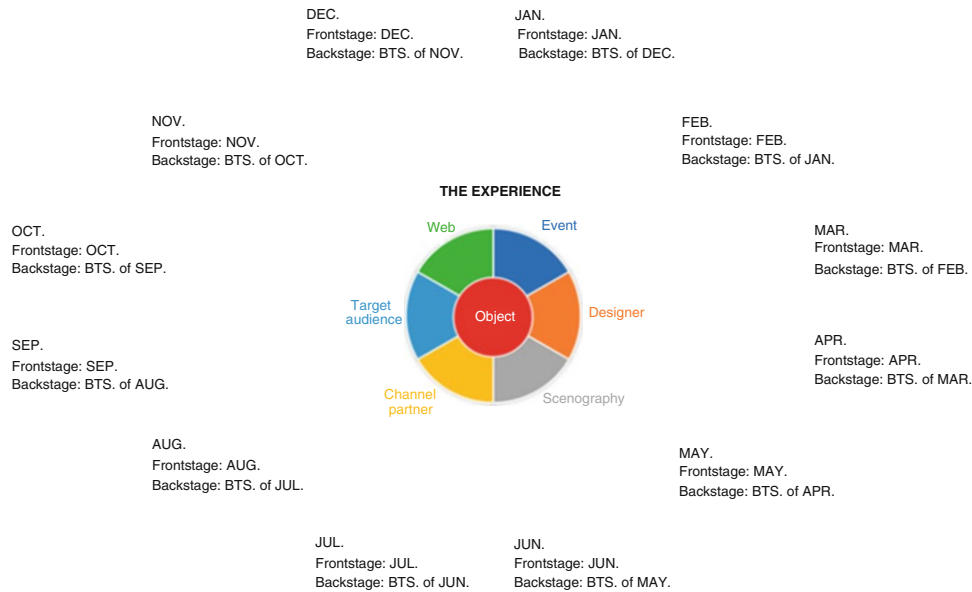
Storytelling, Fig. 7 Photo 1 and 2 of the sandbox (re)configuration of the field of possibility for “Malteriet”

Another important figure in the configuration is the rat. During the course of the living story process, the rat alters its position. In the first initial configuration (photo 1) the rat was placed within the tulip plant and storied as a negative element “eating away of the idea” and thus damaging it. The students here actualize cultural knowledge of the rat as a spreader of disease. One day prior to the storytelling workshop the students had briefly pitched the basic idea of using clothing items, etc., as a branding concept inspired by Supreme (among others). One of the audience had ditched the idea entirely and made the students aware of the threat of the concept being “badmouthed.” Also it referred to a general negative tone in Aalborg about the entire Cloud City project as internationally oriented. An insight that the contractor had shared in the initial pitch of the challenge. The lineaments of the rat embodied both these insights of the threat of badmouthing in the configuration, which is a good example of how the figurines function as multilayered memory devices.

In photo 2 the perspective of this badmouthing is restored to become an asset. This happens when the rat is moved out of the plant and placed in a position of spectator of it instead. Having acknowledged the circumstances of the badmouthing, the students conclude that they need to alter that situation somehow. The students

make us of the general instruction to ask “what else could it be” in order to explore the possibilities of the configuration. The move is elicited when in a kind of what if. The replacements invoke another ante to emerge as an opening for an alternate outcome. Rats are no longer eating away the plant, but are witnessing its cycles and are running from place to place spreading rumors about it – something that potentially catches on, goes viral spreading the word of Cloud City and Malteriet as a place of varied, continuous action, worth visiting. In that sense the relation of the rat and the tulip is reconfigured as beneficent, and the materially restored relation enacts the core of the design.

As an importantly entangled part of that restorying of the rat as agent, the football (storied as the playful element of the design) also changed its direction in photo 2. In photo 1 the football points toward the shopping-cart (“the purpose for visits is collecting fun experiences and buying fashion items”). Notice how the “front” of the football in photo 2 has turned and is now directly pointing toward the rat. A cue, as to what the playful element of the design turned out to be during the living story process: a rodent employed as a spreader in a meaningful play in the sense of “catch and pass it on.” Keep the ball moving. Thus, by turning the ball toward the rodent instead of the shopping cart marked an altering of the



Storytelling, Fig. 8 Model depicting the concept of motor of the ever-changing events and stories, (of students own making, Behnke and Nielsen 2020)

course of the story of the entire experience design from just an isolated shopping experience to the spreading and creating of stories worth telling, with the purpose of weaving a bunch of different stories of Cloud City as a manner of getting a continuous, yet varied flow of attention among a vast variety of groups both locally, nationally, and internationally in full alignment with the vision of Cloud City. As stated, living stories inevitably also involve placing bets on the future, which enables the storyteller and the partakers to make sense of not just the present and the relevant past but includes making sense of relevant next steps. The configuration of the axis: football, heart, and rodent (as spectator of the tulip) entailed just that with the rat as the reconfigured playful agent of keeping the ball moving.

The groups concept (Behnke and Nielsen 2020) of allocating the building “Malteriet” as a driver for the continuous branding of Cloud City meant constructing the building as an ever-shifting site of engagement. One with a wide range of monthly events promoting a uniquely designed item of sorts (as part of a growing CC Collection) that each would appeal to a specific – yet, over time – varied target group, which then

continually would “mouth” a wide range of different, yet connected stories about Cloud City.

The following model depicts how the meaning of the concept materialized (Fig. 8).

As such the concept being storied involves the renewal of both time, space and meaning for “Malteriet” and as such the concept is an enfolding of spacetime-mattering, which encapsulates a field of possible becoming for the building, and in turn for Cloud City. A good example of how storytelling practice, as a performative *worlding engagement*, connects to the possible, and to the discovery of new possibilities with possible impact on that world.

Storytelling and the Possible

The material-based storytelling in the above example entails both memory work, meaning making and imagination. The students include their experiences regarding the case as well as available cultural knowledge (of tulip, rats and football-games, viral marketing, etc.) through the material affordances of the methods. As memory-devices the figures here act as both reference-

points and creative building blocks in helping the students (literally) figuring out what is and could become key elements of the design and the function of the building. They (literally) place and replace bets on the future “next” for Cloud City. Regarding this manner of affording such a living process within design processes, Poulsen & Strand notes: “*The novelty of transformation in developing new conceptual comprehensions must be nurtured by the affordances of creative methods to embrace the designerly way of working and thinking and to interweave analysis (of empirical data) into synthesis*” (Poulsen and Strand 2014: authors capture). In alignment with what characterizes the first part of the creative design process, this manner of affording the process entails a reframing of the initial understanding of the problem in that a counter story emerges, when the students play with the field of possibilities of this miniature Tamara-landscape, and the core elements of a creative solution are storied. This above example thereby shows how more precisely the field of possible becoming is invoked by the material affordances of the OT/Sandboxing method and how this method thereby affords the possible to emerge and be played with as renewal of time, space, and meaning as a meaning-matter entanglement through the lineaments of the figurines and across their relations in the entire configuration as gateways to the possible and to discovering new possibilities.

Summary

The chapter clarifies in what ways storytelling connects to the possible. Specifically how the storytelling approach Living story and subsequently, Material-based storytelling entails working and reworking a field of possible becoming that connects to the discovery and employment of new possibilities. While closely tied to what is prompted in and by the present moment (the task at hand) – for example, through the employment of material artifacts – these living, story performances simultaneously draw on that which has passed and the speculation of that yet to be, without any of the two being in a fixed

state, which of course opens for a myriad of ideas to be at play and thus many possible outcomes. As such the act of storying affords the possibility of renewal of both time, space, and meaning of any scenario. There is therefore an intimate relation between storytelling, the possible, and the discovery of new possible becoming’s of the world.

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Street Art

Sarah H. Awad
Aalborg University, Aalborg, Denmark

Abstract

The interest in street art has long involved a wide range of urban visual expressions such as murals, graffiti, tagging, and even urban defacement. These diverse aesthetic forms of expression have therefore attracted numerous theoretical and methodological approaches. Some analyze it from the standpoint of street art as an illegal act of vandalism, some as a political act of resistance, and some as a form of art and a new cultural capital. From a socio-cultural psychology perspective, street art could be analyzed as a social act that intervenes in the urban space, thus opening up possibilities for individuals to shape their environment, and in turn having that new environment with its new affordances shape individuals back.

This entry will discuss different conceptualizations of street art, especially looking at how the definition of street art has developed over time. Then it will outline some of the methodological approaches to analyzing street

art within visual culture. The entry focuses in particular on political messages of street art rather than their artistic forms, and the possibilities those messages could open up in visual culture and public discourse.

Keywords

Street art · Graffiti · Visual culture · Political art · Sociocultural psychology

Today, street art is a popular trend that attracts many enthusiasts. One comes across it in news and online media, in academic research, and in tourist guides in many cities around the world. It has gained much interest and status within contemporary art and visual culture, but this has not always been the case. What is referred to today as street art is often quite different from underground graffiti and name tagging that is associated more with vandalism. Still, the term *street art* is used to denote a wide range of urban interventions, in many instances incorporating quite different aesthetic forms. Street art is used loosely to refer to illegal graffiti paintings, name tagging, commissioned mural paintings, posers and paste-ups, as well as different forms of defacement of monuments and public structures.

The focus in this chapter is to look at street art from the angle of the encyclopedia's core topic: *the possible*, thus looking at street art as an intervention in the city, that reproduces its space and potentially opens up new affordances and possibilities. For this purpose, the focus is on unauthorized political street art in its many different forms addressing – but not limited to – different socio-political issues in relation to its surrounding context. In that sense, the chapter will not put street art into a strict definition with a distinct artistic form, nevertheless it will still provide broad definitions and discuss its historical development. It will then give a brief review of some of the methodological approaches used to understand street art in context. Finally, it will present a discussion of street art as an act of resistance in the public space and its potential to open up new ways of seeing and imagining alternative possibilities.

Definition and History

Broadly defined, street art refers to self-authorized pictures, characters, and different forms that are created in or applied to surfaces in the urban space (Blanché 2015). They are created to intentionally communicate with the wider public and are implemented in a performative, site-specific, temporary, and participatory manner (ibid.). Street art is interesting from a sociocultural psychological perspective because it is one of the many different ways through which humans shape their environment by creating signs – signs that in turn shape how humans relate to the places they live in. The surrounding city environment does not just serve a practical function in everyday life, but it forms part of our identity, behavior, memory, and everyday wellbeing.

Street art and graffiti might be relatively new concepts associated with urbanization and city life, but humans have been creating marks on walls and surfaces throughout history (Donald 1991). The word graffiti is derived from Greek word “γράφειν,” which means to inscribe. The Greek term was used to describe the drawings and writings inscribed on ancient walls and temples, such as those found on the Pharaonic and Roman remains (Wacławek 2011). Today's contemporary graffiti, however, refers to what started as a style of writing and name tagging by spray cans in the underground subculture in USA in the 1960s (Blanché 2015). This graffiti subculture has long been associated with youth creating disorder and vandalism in the city, and their graffiti has been a continuous source of annoyance to police and property owners (Fig. 1). Their graffiti has also shaped many places to be perceived by some as dodgy and unsafe parts of neighborhoods.

However, graffiti has developed into other forms of expression that are not “just” name tagging, but ones that have more elaborate artistic visuals and ones that communicate political and social messages. Those new forms could be characterized as addressing a wider public audience than the subculture of graffiti painters. This development has impacted the reputation of graffiti; from one that denotes vandalism and antisocial behavior, to one that denotes an artistic and

Street Art,

Fig. 1 Brooklyn,
New York, August 2017.
(Photo by author Text reads:
“No Graffiti: Violators will
be prosecuted to the full
extent of the law!”)

**Street Art,**

Fig. 2 Shoreditch,
London, June 2014. (Photo
by author)



political form of expression. This new form has turned areas such as Shoreditch in London (Fig. 2) or Brooklyn in New York into areas of street art tourism. Rather than vandals, those street artists are seen as assets in the branding of different areas. And rather than a marker of unsafe areas, street artists became key role players in making certain areas more desirable to middle class and thus vulnerable to gentrification (Stevenson 2013).

To distinguish this form of street art from traditional graffiti, some scholars use the term *postgraffiti* (Reinecke 2007). The term *postgraffiti* is not used to imply that underground graffiti and tagging are something of the past, but rather to

highlight the new street art form and its distinct subculture that is positioned between art and commerce (Reinecke 2007). Its hierarchy could also be seen in its differential legal treatment from what is considered disruptive illegal graffiti (Waldner and Dobratz 2013). Furthermore, the *postgraffiti* street art attracts different forms of appropriation by art museums and commercial processes of commodification – in some cases to the extent that some street artists would erase their pieces to avoid exploitation (see Vimercati 2016). Any such commercial or commissioned effort to appropriate street art is found by many to divert from what is essential about graffiti and street art; that they are self-authorized, unofficial,

unsolicited, and un-commissioned (Blanché 2015). As others have also noticed, the process of commercialization also threatens to “neutralize” any political message the art form might have (Lewisohn 2008).

The interest of this entry is in the content rather than the form of the street art or graffiti. More specifically on the political content of street art and its growing use as an act of resistance in a global subculture of protest and movements (Doerr et al. 2013; Khatib 2013; Awad and Wagoner 2018). Even though unauthorized street art, whether with an explicit political content or not, is inherently a political act. It challenges the authority’s power over public space, distinguishing political street art (from tagging, for example) that highlights its oppositional counter-hegemonic messages (Waldner and Dobratz 2013) against certain institutions, groups, or ideologies such as capitalism (Fig. 3).

Research on Street Art

The tensions in defining what graffiti or street art is can also be seen in how it has been construed as a research topic within academia, is graffiti and street art antisocial behavior, is it a political act of resistance, or is it a form of art. This has attracted researchers from a wide range of disciplines such as cultural studies, art history, criminology, psychology, urban studies, and sociology, all of

which come with a variety of theoretical and methodological approaches to interpret street art.

The progression of academic interest in contemporary street art and graffiti is traced by Avramidis and Tsilimpounidi (2017) and conceptualized into three different waves. The first academic wave was, according to the authors, characterized by communication and sociology scholars looking at the complexities between the graffiti artists as practitioners and the more hegemonic authorities. Through the gaze of geographers and urban researchers, this research focus was further shifted from the practitioners themselves to the “graffiti site” and its landscape. Furthermore, political science researchers started to look at the political protest aspect of street art and activism. The second wave of scholarship is characterized by research that conceptualized street art within broader discourses in society, looking at the cultural and identity dynamics of the practice and its relation to the wider society. The third, current wave, coincides with the establishment of street art in the visual culture and its acknowledgment as a distinct field of study. This wave opened up wider connections to the topic from a variety of disciplines, which relate street art to issues such as temporality, materiality, space production, documentation, and commodification (Avramidis and Tsilimpounidi 2017).

Methodologically, a range of approaches has been utilized to analyze street art images. One approach has been to develop a historical

Street Art, Fig. 3 Athens, Greece, December 2018. (Photo by author)



conceptualization of street art, looking at it within the historical narratives of its time, and conceptualizing it as a performative process of narrative disruption (Ross et al. 2017). There is also iconographical analysis that attempts to categorize different types of graffiti and street art (Gottlieb 2008). Another approach is a cognitive semiotic one that looks into how narratives are told through the street art images and how those stories shape collective identity and collective memory (Stampoulidis 2019). Also, the interest in the dialogical aspect of the street art has driven research into longitudinal documentation methods seeing street art images as instances in an interaction (Hansen and Flynn 2015). The dialogical aspect of street art has also prompted the development of methods for following the social life of the images as they are transformed and reproduced (Fig. 4) to

represent and position different social groups in a contentious dialogue (Awad and Wagoner 2018; Awad 2020). This latter interest focuses on the political content of street art images and traces how images travel across time and space appropriating new meanings and forms in a continuous public political dialogue (see example of the fleeing refugee family image in Fig. 4).

Street Art and Resistance

In line with the dialogical approach, street art can be seen as voices in the visual culture that starts in the urban space and extends to the wider political discourse. Thus, street art carries the potential and the possibility to be used as a tool of intervention into the public space and as a voice of resistance to



Street Art, Fig. 4 Aalborg Denmark. (Photos by author, from left to right: 4a, August 2015, text reads: “Refugees welcome, bring your families” 4b, February 2016, text reads: “Terrorist welcome, bring your weapons” 4c, April

2018, text reads: “Refugees welcome, no one is illegal” 4d, June 2018, text in Danish translates to: “Invasion, no thank you!”)

Street Art, Fig. 5 Cairo, Egypt, September 2014.
(Photo by author)



hegemonic discourses. Activists around the world have utilized street art as a way to be seen and heard in the public space. Street art has been used in protests to appropriate public space and create alternative representations of different groups. An example of this can be seen in recent political street art that emerged in key areas of protest such as Tahrir Square in Egypt in 2011 (Fig. 5), Zuccotti Park in New York in 2011, or Gezi park in Turkey in 2013, or Freedom square in Sudan in 2019.

When we speak of the political content of street art, we can understand politics as a struggle over presence and visibility, a struggle over the representation of the society and who has the resources and access to represent it (Ranciere 2004). So street art comes as unauthorized expressions of a different representation breaking with the monopoly of public discourse by the authority. It provides a counter-narrative and a voice of dissent to dominant urban aesthetics and norms (Avramidis and Tsilimpounidi 2017), as well as a social act of resistance that is oriented towards change (Awad and Wagoner 2017). By proclaiming city space, street art also transforms the conception of public space, from a place predominantly produced and controlled by authority (Lefebvre 1974/1991) to a common space that affords new ways of saying, doing, thinking, and seeing (Agustin 2017). Hence, it can very well be perceived as an active form of both the possibility and the actuality of political participation (Waldner and Dobratz 2013).

Following the social life of street art images as they are produced, perceived, erased, documented, and transformed to other mediums provides an analytical lens into the dialogues they construct in society and the new ways of seeing they potentially provide. Street art images as tools of resistance have the potential to visually reconstruct the representation of power and bring visibility to marginalized groups (Fig. 6). They also construct affective symbols for different causes that mobilize different solidarity groups. They also visually position different social actors in relation to different social issues and commemorate different events thus co-constructing collective memory and a community's identity (Awad and Wagoner 2018).

Street Art and the Possible

It is precisely through the disruptive act of creating street art that the (im)possible is redefined, that is, the potential of appropriating spaces and reshaping the city environment with a new voice, a new possibility thus giving new affordances to the urban environment and new possibilities for action (Glăveanu 2020). When artists share their version of social realities and their imagination of alternative ones, in an environment where only one version of reality is allowed in the public space, street art becomes an outlet through which individuals can represent themselves and others, imagining different social positions, with

Street Art,

Fig. 6 New York, August 2017. (Photo by author. Text in Arabic and English reads: This book belongs to its owner Fathallah Saad. He bought it with his own money at the beginning of March 1892. The mural is part of the Palestinian artist Emily Jacir's project which commemorates the over 30,000 books that were looted by Israeli authorities from Palestinian homes, libraries, and institutions after their displacement in 1948)



different power distributions. And even when this imagination is not actualized, it can disrupt the hegemonic discourse and can symbolically destroy any glorified image of authority.

It is unrealistic, however, to paint an image of street art as a revolutionary act of resistance that promises radical social change in and by itself. It is important to look closely at the potential of street art, especially in relation to its ability to shape an environment in a way that matters. To do this we need to first acknowledge how every day meaning is constructed and re-constructed in culture not only through language but also through all the different images we see every day in our visual culture. Our surrounding city visuals do not just serve as a background to our urban experience. They form part of how we identify ourselves with different places, how we feel represented and heard, and thus how we feel at home or being foreign, and how we feel connected and enabled or constrained. We identify ourselves with certain parts of the city: certain structures, streets, or imagery. And as we inhabit those parts, they come to inhabit our life stories and experiences. Within that understanding of meaning production in urban space and visual culture, we can see how street art can be a catalyst of new ways of seeing and acting. It thus

opens up new ways of experiencing and relating to the city and to the wider society. It triggers an active participation in our everyday experience. Each street art message calls for a personal interpretation of it, an interpretation that tells more about us than it tells about the street art piece, one that is affected by our current identities, ideologies, and social positions. The continuity and insistence of those images make them highly influential, yet they are often unnoticeable in our everyday life.

We should, however, refrain from romanticizing street art as an exclusively positive power of social change. The same potential of street art to appropriate city walls and produce space of inclusion can also be used to create spaces of exclusion and hostility. In the examples in Fig. 4, posters were used not only by humanitarian groups to welcome refugees in Europe, but also by anti-immigration groups who appropriated the same design to warn against refugees being “terrorists.” The same street art tools and potentials that could be used to open up new ways of inclusion, political participation, and solidarity are also used to advocate hate and discrimination against minority groups. Nevertheless, with the conception of street art as an ongoing dialogue, participatory, and transformative, there is always space

Street Art, Fig. 7 Malaga, Spain, June 2016. (Photo by author)



in the city for responses, for a new voice, and a new layer to the wall (Fig. 7).

That is precisely what distinguishes street art as a form of art and as a voice in political discourse: its temporality in an ongoing dialogue, its transformative nature with every pedestrian, and its participatory nature in a very place-specific context. It is an instance in a dialogue that is waiting to be responded to, erased, or transformed. It is mutually created and transformed by every person experiencing it. It brings in the agency of individuals in an urban domain that is predominantly shaped by those in power.

So to focus on street art as an act of resistance to dominant discourse is to acknowledge the mere power of imagination that lies in a street art image that moves us beyond the perception of the here and now. Even in situations of extreme oppression, people seek artistic expression to resist dominant discourses and express themselves (Scott 1990). One that reconstructs the past and suggests that an alternative reality is possible. And maybe that brief encounter with this image will not change the present, but it will make the present more bearable knowing others might also share their dream.

Cross-References

- [Aesthetics](#)
- [Affordance](#)

- [Creativity](#)
- [Political Imagination](#)
- [Social Change](#)
- [Wonder](#)

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Street Protest

Patricio Saavedra¹ and John Drury²

¹Institute of Social Sciences, University of O'Higgins, Rancagua, Chile

²School of Psychology, University of Sussex, Brighton, UK

Abstract

Street protests are a type of collective action. Street protests are rather a fuzzy category, which means there is sometimes no hard and fast boundary with other forms of collective action. However, in both academic and activist circles and discourse, it is conventional to distinguish street protests from other collective actions as riots, strikes, and direct action. A protest – such as a demonstration march – is a

way of saying “no,” whereas riots, strikes, and direct actions go beyond saying to *doing*. However, as protests take place in intergroup contexts, participants sometimes transition from symbol to instrumental actions.

Keywords

Collective action · Demonstration · Mobilization

Overview

This entry will cover two main areas: First, the basics of street protests from a social-psychological perspective, and second, the mechanisms through which protests may relate to social change. We start by defining protests and differentiating them from other activities and concepts commonly (interchangeably) employed in the specialist literature. Then, we summarize the main approaches that have addressed the phenomena of protests from a psychological perspective. After that, we shed light on three key aspects of protest we consider are important but neglected from a social-psychological point of view: The relevance of the political context where protests are carried out; nonparticipants' support for street protests; and the role of media coverage of protesters' actions.

How Can We Differentiate Street Protests from Other Phenomena?

Street protests are a type of collective action; therefore, it is crucial to define first what collective action is, and then differentiate protests from more complex phenomena such as social movements. From a sociological point of view, Snow and collaborators (2004) argue that collective action can be defined as “any goal-directed activity engaged in jointly by two or more individuals. It entails the pursuit of a common objective through joint action” (p. 6). Even though this definition is useful to understand the basis of collective action, we should also consider the definition of Wright, Taylor, and Moghaddam

(1990), who, from a social-psychological perspective, hold that the understanding of collective action cannot be reduced to the number of people involved, and that the purpose (who the action is for) is more important. Hence, beyond considering joint actions as a requirement, individual actions carried out on behalf of specific groups should also be considered as collective action.

Street protests are inherently political and contentious but symbolic in the sense that they communicate resistance or opposition. This means that protests are aimed at advocating for changes in specific policies and living conditions at the societal level, while they seek to mobilize public opinion or other third parties in their favor (Lipsky 1968). Concerning their organization, protests may be more or less structured, being coordinated by diverse political or nonpolitical actors using various channels (e.g., the Internet; Kim 2019), while the existence of formal leaders is not a requirement (e.g., Kim and Kim 2009; Lee and Chan 2018). Whatever the mechanisms of coordination and organization, street protesters typically assemble at a specific point to take to the streets and raise their demands.

Coming back to the distinction between street protests and social movements, it is worth noting that whereas the former are activities that social movements may organize at a specific time and place to reach their goals, social movements are broader phenomena which last longer than a single event, may coordinate diverse activities throughout time (e.g., rallies, boycotts, and road blockades, occupy buildings), and employ varied strategies (i.e., peaceful, violent, or a combination of both) (e.g., Seidman 2015). Furthermore, Rucht (1998) suggests two key characteristics that differentiate social movements from protests. First, social movements seek a new societal order instead of being centered on solving specific issues (e.g., a tax increase) as protest events are. Second, unlike protests, social movements are typically embedded in an extensive network of groups and organizations that may help them to reach the expected social change. However, similar to what happens in the study of social movements, there are diverse voices and views concerning goals, expected success, and allowed

actions among protesters. Accordingly, protest events cannot be characterized as uniform entities. Thus, along with peaceful actions, protesters may also take part in protest violence (e.g., throwing stones at the police, damaging buildings) as a form of collective violence (Tilly 2003) that may be a result of either preplanned strategies or spontaneous reactions to immediate adversities (e.g., police brutality).

What Are the Main Social-Psychological Approaches to the Study of Protests?

Regarding the study of protests, the two most important types of social-psychological can and should be distinguished. The first of these approaches is concerned with the psychological *predictors* of collective action. The primary theoretical reference here is the Social Identity Model of Collective Action (SIMCA; van Zomeren 2013; van Zomeren et al. 2008) and associated theories (i.e., social identity theory and relative deprivation). In general terms, SIMCA entails four core motivations that may explain people's participation in protest: group identification, injustice/anger, group efficacy, and moral convictions (van Zomeren 2019). According to van Zomeren, these motivations are context-sensitive, and therefore, the importance of each of them would be a function of the features provided by the cultural and political systems in which people are immersed.

The second social-psychological approach is the Elaborated Social Identity Model of crowd behavior (ESIM; Drury and Reicher 2000, 2005). Unlike SIMCA, ESIM seeks to explain the *dynamics* of protests. During protests, new norms of conflict can emerge due to changes in the relationship between protesters and the police. This means that (some of those) protesters who believe that protests should be peaceful might change their views in the course of the event if police actions are experienced as illegitimate (unfair, disproportionate) and indiscriminate (nonselective use of force by police officers). As a result, protesters may become empowered (by a sense of being part of a unified crowd) to enact

new norms of conflict, to retaliate or act in self-defense against the illegitimate police action (Stott et al. 2020). This pattern has been observed at student protests, antitax protests, and environmental protests, among others (Drury and Reicher 2018). ESIM's explanation of the mechanisms through which violence may become a legitimate action has helped to dispel the myth that protest crowds are inherently violent and irrational (e.g., Le Bon 1895/2002). It has stressed instead that these conflicts are situated in a historical context where social identity (including shared definitions of legitimacy) plays a crucial role in limiting as well as enabling collective behavior. In line with ESIM, research has suggested that protesters' actions may vary (from cooperative to resistant) depending whether police officers are perceived to enable people's right to protest or to unfairly restrict the rights of protesters (Drury and Reicher 2018).

Why Does the Political Context Matter for Protests?

Like social movements, street protests do not happen in a vacuum; rather they take place in specific societal and historical settings. Even though ESIM research has considered the historical context where collective action and protest violence take place, social-psychological research has barely conducted a systematic study of both the political context in which protesters are immersed and the actors that shape this context (e.g., government officials, the police, and policymakers).

From a sociological point of view, Tilly (2008) has suggested that the occurrence of mobilization processes and the type of actions people may carry out cannot be understood without studying the political conditions under which people are living. Specifically, Tilly argues that it is not only the immediate political context that surrounds any mobilization process that scholars should look at but also the interactions people and authorities have had throughout time regarding particular claims and demands.

Regarding its occurrence, Eisinger (1973) suggested that protests are less likely to occur in

either extremely closed or highly open political systems. Conversely, street protests might be more frequent in those cities where the authorities had some degree of responsiveness to people's complaints, and the political institutions show a combination of open and closed features concerning protests. In contrast to Eisinger's ideas, Tarrow (1994) suggests that protests are more likely to occur the more tolerance a political system shows toward social mobilization processes, whereas a constrained context would make the task more difficult for protesters. With respect to performances (e.g., peaceful protests) that take place between a claimant (e.g., workers) and a target of the claims (e.g., government officials), they are shaped by the relationship those actors had maintained in the past. Furthermore, the specific actions people might carry out during a performance (e.g., protest violence) are not only historically learned but also limited for these historical interactions. This means that within a particular society, protests may be permitted activities through which people could freely complain against the government. However, what is acceptable to do during protests is restricted by law, group norms (e.g., people can march peacefully, but throwing missiles at the police is not acceptable), and a set of actions people have learned in a specific setting.

What Is the Impact of Repression on Protests?

Along with the dimensions mentioned above, another significant dimension that is part of the political context shaping the life cycle of street protests is the presence of repression (Davenport 1995, 2004; Della Porta 1995). Indeed, Della Porta (1996) argues that repression can be considered as a barometer of the political context by taking into account its direct and visible impact on social movements, and in particular, on a movement's behavior (including protests). To understand what repression is in a broader sense, Tilly provides a useful definition for it as "the cost of collective action to the contender resulting from interaction with other groups; as a process, any

action by another group which raises the contender's cost of collective actions..." (1978, p. 55).

Whereas the main perpetrator of repression against protesters is easy to identify – the police – the effects of repression on social mobilization processes are not. Thus, depending on the political circumstances under which repression takes place, its effectiveness (Davenport 2004), and the form of protest policing in each country (Della Porta and Reiter 1998), in some scenarios repression can restrict the participation of people in protests (Koopmans 1997), but in other political contexts, repression can *encourage* the engagement of citizens in protests against the establishment (Brockett 1991; Francisco 1995). To put it differently, while those who carry out repression are mostly the same almost everywhere (i.e., the police, spies), the effects of repression on mobilization processes are diverse according to the political context. Notwithstanding the latter, at the time of writing, research aimed at including protestors' perceptions of political context and the presence of repression are rare (Honari 2018a, b; Saavedra and Drury 2019b).

Should Protests Remain Peaceful All the Time?

The right to peaceful protest is included in the universal rights of freedom of expression and assembly (Howie 2018). However, Jarman and Hamilton (2009) have pointed out that restricting the right to protest to peaceful actions is problematic because it ignores the potential existence of tensions during protests and people's reasons for taking part in violent confrontations. Moreover, what counts as "peaceful" versus "violent" protest is often contested between police and protesters – as illustrated in police responses to the nonviolent direct action carried out by antiroads protesters in the 1990s (Drury and Reicher 2000). Unfortunately, some scholars have (perhaps inadvertently) contributed to the stigmatization of those who for whatever reason participate in protest violence by characterizing their actions as "non-normative," "extreme," or "radical" rather than

analyzing the process whereby forms of protest change over time (e.g., Schumpe et al. 2018; Simpson et al. 2018; Thomas and Louis 2014).

What Is the Relevance of Nonparticipants in the Study of Protests?

Evidence about what Neville and Reicher (2018) have called the "impact of crowds beyond the crowd" is rather scarce. Fortunately, this situation has started to change thanks to some recent research studies that have explored the impact of protests on both those nonparticipants that share the same proximal physical space with protesters as a university campus (Selvanathan and Lickel 2019a) and also on those who do not participate but may follow protests through mass media (e.g., Hou et al. 2018). In an interesting contribution, Selvanathan and Lickel (2019b) have suggested that nonparticipants can experience feelings of empowerment or threat in response to mass protests that may affect their identification with and support for a specific social movement. This means that rather than being passive receivers of information regarding protests, nonparticipants might actively "read" and "interpret" what it is going on in the streets. Accordingly, nonparticipants may play a crucial role in the success of protests by becoming protesters (Saab et al. 2015; Subašić et al. 2018); providing practical support for those who take to streets through financial aid, preparing food, or elaborating informative materials about protests; giving support for specific protesters' actions; or becoming sympathizers who might help protesters to gain public opinion hearts.

When Do Nonparticipants Support Protest Violence?

Just as ESIM describes how protesters' identities and definitions of legitimate practice change (Drury and Reicher 2018), recent experimental and survey research has shown that nonparticipants' support for violence can also change in a

similar way – that is, depending on the interaction between protesters and the police, as well as on the conditions set by authorities regarding protests (Lee et al. 2021; Saavedra and Drury 2019a, c). In other words, nonparticipants may support protest violence as a function of the dynamic of protests.

Moreover, recent research also suggests that nonparticipants may conceptualize protest violence as a relational phenomenon in which legitimacy may change according to the perceived context where protests take place (i.e., imposed restrictions) and who is considered the main aggressor (protesters or police officers). This idea challenges the arguments included in a plethora of psychological research which assumes that “non-violent” and “violent” actions in protests are mutually exclusive (Becker and Tausch 2015; Tausch et al. 2011; Teixeira et al. 2019), and that protest must be peaceful to ensure nonparticipants’ support (e.g., Orazani and Leidner 2019a, b; Thomas and Louis 2014). Facing a situation where the right to protest is unfairly restricted and the police attack protesters, nonparticipants may come to agree with protest violence even though they initially disagree with this type of action. This analysis helps to make sense of the growth and escalation of recent social movements, where violence became more normative but public support was also increased, such as those in Chile (2019–2020) and Hong Kong (2019–2020) (Stott et al. 2020). Consequently, we suggest that protest violence against the police (as “self-defence”) and nonparticipants’ support for these actions should be considered as a subset of protest explained in terms of their rationale instead of being marginalized and criminalized by authorities, researchers, or public opinion (Saavedra and Drury 2019a).

Media Coverage of Protests and Protest Violence

Nowadays, media coverage and new technologies (e.g., Internet) are vital sources from which people can get information about protests and those who participate in them (McGarty et al. 2014). Thus, through media outlets, people can get an idea of

public opinion regarding protests and the actions protesters carry out in the streets (Selvanathan and Lickel 2020). However, this involves three main issues. The first of these concerns the invocation of “public opinion” in media coverage. Public opinion can be depicted in different forms – through survey polls, statements by reporters and officials, or the generalization of some bystanders’ views (McLeod and Hertog 1992). The problem with many of these characterizations of public opinion is they can be inaccurate, or mere manipulations aimed at demonizing protests and protesters.

The second is the issue the approach used to frame protests. Framing of protests is related to the paradigm of protest (Chan and Lee 1984; McLeod 2007). In short, this means that media coverage may negatively affect people’s ideas (e.g., nonparticipants) by making them see protesters as outsiders (i.e., setting a division line between protesters and the whole society), and putting excessive emphasis on “radical” actions (e.g., protest violence against the police) carried out by protesters (Lee 2014).

The third critical aspect is to resist misrepresentations about protests taking into account that protest violence can appear and disappear during a single event (Day et al. 2018). Thus, protesters could alternate between different actions to confront restrictions imposed by authorities or other groups (e.g., counterprotesters). Therefore, people should point that many reports on protesters’ actions released through media outlets (e.g., use of violence against the police) may be only partial snapshots that do not necessarily represent neither the whole protest nor show the reasons protesters considered to carry out those behaviors.

Summary

In this entry, we have described a set of characteristics that allow us to recognize protest as a phenomenon worth to be studied in its own right. In particular, we distinguished between two concepts frequently used interchangeably, street protests and social movements.

This entry also shed light on the relevance that both authorities' measures regarding protests and the presence of repression (political context) have to the study of protests. Indeed, we highlighted the fact that, despite the pervasive idea that protest should be peaceful to gain legitimacy, protesters and nonparticipants' support for protest violence is often based on a similar rationale. This means that the perceived political context and the dynamic of protests (the interactions among protesters and the police) are the reference points for people's evaluations of their support (or not) for protesters' violence. Thus, protesters and nonparticipants may conceptualize pushing back or even fighting police officers as legitimate self-defense when people perceive the government trying to restrict the right to protest and police arbitrarily beating or arresting protesters. The latter means suggest that protesters and nonparticipants may conceive protest violence as situational and relational phenomena that should not be reduced to explanations based on personal traits, ideological orientations, or the irrationality and dangerousness classically attributed to crowds.

Undoubtedly, and for the sake of democracy, protests will continue to take place worldwide. Accordingly, both scholars and public opinion need to be aware of the political conditions under which these protests occur, the occurrence of protest violence, potential media coverage bias on protests, and the dynamics of protests that make people support (or oppose) protest violence. Indeed, we argue that people must focus their efforts on understanding the political trajectories and historical repertoire of protests of a specific society before analyzing and judging the occurrence of protest violence and the support it can gain from public opinion. We suggest that one of the main effects of these efforts would be that those who use (and support) protest violence will not be immediately vilified because of their actions and thoughts.

Cross-References

► [Social Change](#)

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Striving

► Spirituality

Sublime

Robert R. Clewis

Gwynedd Mercy University, Gwynedd Valley, PA, USA

Abstract

This entry defines the sublime and presents its historical context, focusing on its conceptual and philosophical aspects. The sublime denotes an intense, charged emotion with high arousal and containing a mixed valence

(negative-positive). A sublime experience is an aesthetic experience of uplift and elevation in response to a powerful or vast object that is otherwise typically experienced as menacing or overwhelming. The experience is overall positive and pleasing, for participants typically desire the experience to continue. Second, this entry surveys several themes disputed in the literature: the sublime's relation to beauty, fear, and awe, why it is pleasing, and its being self-referential or reflexive. Third, the entry summarizes recent empirical research on the topic. The sublime has received relatively little scientific attention, only beginning in the past decade. A prominent empirical approach to the sublime conceptualizes it as having a fear component, although some recent studies have begun to question this. Finally, the entry concludes with a reflection on the sublime and the possible.

Keywords

Sublime · Sublimity · Awe · Beauty ·
Connectedness · Transcendence ·
Imagination · Esthetics · Philosophy

This entry defines the sublime and considers it in its historical and philosophical contexts. Second, it surveys several themes disputed in the literature: the sublime's relation to beauty, fear, and awe, why it is pleasing, and its being self-referential or reflexive. Third, it summarizes the empirical research in this area that has recently emerged. Finally, the entry addresses the connection between the sublime and the possible.

Definition and Philosophical History

The sublime denotes an intense, charged experience that has a high arousal and a mixed valence (negative-positive). Sometimes called an experience of “sublimity,” the sublime is an aesthetic experience of uplift and elevation in response to a powerful or vast object that otherwise is typically experienced as menacing or overwhelming. Although the valence of the experience is

generally mixed, it is overall a positive one, for participants typically desire the experience to continue.

The trigger may be natural, artifactual, or conceptual (as in a grand theory or proof). Typical examples of elicitors include waterfalls, icebergs, raging storms, deep ravines, canyons, the starry sky, mountain ranges, and striking cathedrals, dams, and ancient ruins. Here are some concrete examples from the world of art or artifact: Haydn's *Creation*, Beethoven's Ninth symphony and Wagner's *Lohengrin*; the poetry of Homer, Shakespeare, Milton, Wordsworth, Coleridge, Leopardi, Baudelaire, Edgar Allan Poe, Walt Whitman, or Nikki Giovanni; an image of a black hole or a photo of the Milky Way; the sculptures of Richard Serra; the paintings of Caspar David Friedrich, J. M. W. Turner, John Martin, and Barnett Newman; the tragedies of Sophocles or Schiller; Werner Herzog's film *Aguirre: The Wrath of God* and many scenes from natural disaster and doomsday films; St. Peter's in Rome, and the churches at Chartres, Milan, or Ulm. To say these are considered “sublime” is not to use the term as an epithet for “excellent” but is to indicate that the objects are likely or disposed to elicit a sublime response, or at least a response lying on a continuum going from chills/thrills to being moved to the sublime (Konečni 2005).

The sublime is traditionally conceived as being what is called an “aesthetic” experience. The sublime may well be connected to politics or religion or have political or religious dimensions, but in authors ranging from Longinus, Burke, Kant, and Schopenhauer, it has been seen as primarily aesthetic. An aesthetic experience is a perceptual-sensory, cognitive, and/or emotional-affective response to objects engaged with or attended to with absorbed attention. The aesthetic involves a particular kind of stance toward or interaction with the object or event, which has been understood in terms of disinterestedness and distancing (Menninghaus et al. 2017).

Philosophical discourse on the sublime can (in the Greco-Roman tradition) be traced back to the first-century CE work *On the Sublime* (*Peri Hypsous*) by an author referred to as Longinus or

pseudo-Longinus (2019). Some scholars argue that a discussion of *hypsous* goes back even to certain passages by Plato or the Pre-Socratics and Homer (Shaw 2017; Kirwan 2005; Porter 2015). In late ancient and medieval aesthetics, from Augustine to Aquinas, the experience was often connected to an experience of God or the divine. This is true even in a late Renaissance account found in Petrarch (2019), who describes his experience ascending Mount Ventoux in 1336. At the mountain summit, he reads a passage from Augustine and reflects on the triviality of ordinary affairs, admiring the greatness of the mind drawing closer to God.

The sublime came into its own as an explicit category, and distinctly aesthetic notion, in the modern period. In an influential treatise on the sublime (1757), Edmund Burke – the author probably most cited by contemporary empirical researchers studying the sublime – characterized the experience as a kind of “delight” caused by “terror” (Burke 2019). Such terror was paradigmatically induced by objects with qualities such as power, vastness, obscurity, darkness, and seeming endlessness. Burke offered detailed (though now dated) psychological and physiological descriptions of the experience. In addition, he emphasized a distinction between the sublime and the beautiful. Whereas the experience of the sublime was triggered by qualities such as ruggedness and vastness and contained an element of terror, the feeling of beauty was elicited by features such as being small, smooth, polished, light, and delicate and was simply agreeable and pleasing.

In the *Critique of the Power of Judgment* (1790), Kant presented a very influential theory of the sublime, dividing up the sublime into the mathematical and the dynamical, as responses to overwhelming vastness and power, respectively (Kant 2019). Kant described the experience as a mixed but ultimately pleasant coordination between the mental capacities of reason and imagination. For Kant, the stimulus of the sublime experience was typically a marvel of nature. For this reason, his ideas have been important for contemporary theories of the environmental sublime (Brady 2013, 2019). Although he

emphasized the natural sublime, Kant also acknowledged the possibility of feeling the sublime in response to art (Kant 2019).

While rejecting Kant’s ultimate grounding of the sublime on a human capacity for morality, Schopenhauer accepted Kant’s view that aesthetic experience required adopting a “disinterested” perspective. The sublime gave us insight into the world as it was in itself (the “world” as “will”), in which we are all part of a larger whole (Schopenhauer 2019). In order to experience the sublime, he thought, it is necessary to adopt a perspective in which private interests are downplayed or ignored, in a moment of the loss of self. Thus, the experience involved an awareness of the smallness of everyday things and even life itself. Like Burke and Kant, Schopenhauer distinguished the sublime from beauty. Unlike Kant, he viewed the sublime as being on continuum from weaker to stronger forms of intensity and arousal.

In his 1835 lectures on fine art, Hegel (2019) identified the sublime in art, above all, in the religious poetry found in the Indian, Persian, Hebrew, and Christian mystical traditions. The sublime expressed in the poetry involved a person’s recognition of his or her finite inadequacy, or insignificance, before a higher supernatural power. While Hegel discussed the sublime separately from beauty, he viewed the sublime as ultimately a mode of beauty.

Theories such as these (see Table 1) inspire contemporary accounts of the sublime.

Core Themes

Relation to Beauty, Fear, Awe

Some theorists (e.g., Hegel) see the sublime as a kind of beauty, although they grant that it is an intense kind. In any early work of 1764, Kant admits that the sublime can be combined with beauty: in the splendid or magnificent sublime, beauty is “spread over a sublime prospect” (Clewis 2019a, p. 106). This approach is also represented in the psychological literature (2005, 2011) and even in recent philosophy (Zangwill 2019). Proponents of this view cite the fact that

Sublime, Table 1 Key points in theories of the sublime

Author	Does the person feel significant and have sense of smaller self?	Does one experience a feeling of connectedness, and belonging?	Is the experience primarily sensory-perceptual, or cognitive?	Is the elicitor typically art (artifact), or nature?	Does one reflect on oneself (consciously, reflexively) during the experience?	Is the imagination activated and expanded?	Does one have a sense of freedom and detachment from the mundane?
Longinus (1st-3rd c. CE)	No, the soul appears to admire its nobility	Unclear	Can be either	Either, but typically poetry and rhetoric	Unclear	It seems so	Yes
Burke (1757)	Unclear	No, separation from the object of delightful terror	Primarily sensory-perceptual	Either nature or art (especially poetry)	No	It seems so	Unclear
Kant (1790)	No, one feels significant on account of reason Yes, one feels insignificant/smaller self (yet oneness with the world)	Yes, belonging to the moral world or order Yes, belonging to a universe or world, the one (metaphysically)	Can be either Can be either	Either, but typically nature Either nature or art (music, dramatic tragedy)	Yes (at least according to the standard interpretation) Yes, sometimes, but it is not necessary	Yes Unclear	Yes Yes
Hegel (1835)	Yes, one feels insignificant/smaller self	No, separation from the infinite (or supernatural power)	Can be either	Typically art (esp. religious poetry)	Unclear	Unclear	Unclear

the experience (while mixed) appears to be pleasant overall rather than one of terror in response to danger. In contrast, theorists such as Burke and Kant distinguish it from beauty, citing the fact that different kinds of objects appear to elicit two distinct kinds of aesthetic experiences, differentiated by their arousal or intensity as well as physiological responses (chills, goosebumps, increased heart rate). Even within the view that the sublime cannot be categorized as a kind of beauty, there are subtle disagreements. Whereas Burke's theory focuses on terror caused by danger or extremity, the Kant of 1790 (2019) and Schopenhauer both deny that the sublime contains actual fear. Unlike Burke, they maintain that the experience of the sublime is disinterested.

A Burkean view of the fear component in the sublime can be found in recent psychological research. Gordon et al. (2017) present a threat-based kind of the sublime. This approach has philosophical precedent in the theory of Burke, who holds that the sublime contains an element of terror (that is, "delightful" terror).

This issue raises the issue of the sublime's relation to "awe," which is etymologically rooted in an older Germanic-Norse word for "fear." The term "awe" was used by prominent writers on the sublime such as Burke, but they did not make it the object of their study. There is not yet consensus in either psychology or philosophy about how awe and the sublime are related to each other. There are four main perspectives on the relation.

The first approach holds that awe and the sublime are *not* related in any significant way, at least no more than other distinct aesthetic concepts might be. This is the approach adopted by most of the psychological research on awe carried out in the wake of Keltner and Haidt (2003). The *second* view is that the awe and the sublime are identical. The identity claim can be understood in extensional and intensional senses. Indeed, a great deal of recent empirical research tends to conflate the two concepts. A *third* option is the component view. There are two strands of this approach. The first strand states that awe is a component of the sublime. For instance, Bethelmy and Corraliza (2019) propose that awe is part of the "sublime experience toward nature." (The other key

component of the sublime is what they call "inspiring energy.") They propose to view the sublime as a "unifying feeling that encompasses awe and positive and pleasurable emotions within a single construct" (2019). Ishizu and Semir (2014) propose that awe and fear are components of the sublime. The second strand states the converse: the sublime is a component of awe, that is, a necessary part of the experience of awe.

The *fourth* position is that awe and the sublime overlap somewhat in extension and intension but are not identical. One version of this view is that they are in a family resemblance relation. For instance, Brady claims that awe and the sublime are "neighboring" concepts. Likewise, Keltner and Haidt (2003) call the sublime an awe-*like* aesthetic emotion (p. 299). One version of this family resemblance view is that the sublime is best seen as aesthetic awe; this implies that awe and the sublime are related and overlap. Calling the sublime an "aesthetic" kind of awe, Konečni distinguishes it from religious awe and sociopolitical awe (Konečni 2005, 2011). Conceiving of the sublime as aesthetic awe reconciles many of the apparent differences between awe and the sublime – if the sublime is only a kind of awe, the sublime cannot be identified with awe or conflated with it. It also accounts for many of the similarities and areas of overlap between awe and the sublime (mixed valence; response to vastness and consequent accommodation; feeling of transcendence; self-loss and connectedness; altered perception of time; prosocial attitudes; similar physiological responses).

One might think that whereas awe refers to a subjective state or experience, the sublime is the property of an object. This may even be suggested by the Merriam-Webster dictionary's entry for the term, "sublime": "lofty, grand, or exalted in thought, expression, or manner; of outstanding spiritual, intellectual, or moral worth; tending to inspire awe." However, many theorists view the sublime as a mental state too. In the work of Burke (2019) and Kant (2019), the sublime is understood as a subjective feeling and experience, even an emotion (*Rührung*). Wordsworth writes of "the sensation of sublimity" as "a comprehensive awe" (2019, p. 180). Using "feeling" is a

prominent way to speak of “aesthetic emotions” such as the sublime (Menninghaus et al. 2019). Keltner and Haidt (2003), as noted, refer to the sublime as an awe-like aesthetic *emotion* (p. 299) and thus did not view it as an objective property. This perspective of the sublime as a subjective state or experience is also found in a recent study of the sublime (Pelowski et al. 2019).

Why Pleasing?

There is a puzzle regarding how the experience of the sublime can be pleasant and satisfying rather than unsettling (Forsey 2007; Clewis 2019a). Why should a large or powerful object that is ordinarily overpowering or menacing, not simply upset people rather than evoke the sublime? Three answers have been given: a sense of belonging, rising above everydayness, and activated imagination.

Schopenhauer suggested that the sublime is pleasant on account of a sense of belonging or connectedness. “We are one with the world and are therefore not oppressed but exalted by its immensity” (Schopenhauer 2019, p. 197). For Kant (2019), a related sense of belonging emerges when one finds one’s place in a moral order.

Kant posited that the sublime is pleasing because it involves freedom or detachment from everyday affairs. When looked at from a distance and the greater scheme of things, ordinary endeavors seem relatively trivial during sublime experiences. “In our aesthetic judgment nature is judged as sublime not insofar as it arouses fear, but rather because it calls forth our power . . . to regard those things about which we are concerned (goods, health and life) as trivial” (Kant 2019). In the sublime, the removal of this burden is experienced with satisfaction.

Finally, several theorists think that the imagination is engaged or “expanded” in the experience of the sublime, leading to pleasure. Anna Aikin, William Wordsworth, Moses Mendelssohn, and Kant (Clewis 2019a) emphasized the role of the imagination in sublime experiences. This view is also found in contemporary theories (Hepburn 1996; Brady 2013; Clewis 2019b, p. 349).

In short, the experience of the sublime is pleasant insofar as someone finds his or her place in a

larger scheme; or because a release from troublesome burdens is itself satisfying; or because the activation of a core mental capacity brings pleasure.

Reflexivity

Some theories maintain that the sublime experience must be reflexive and concern explicitly self-directed attention. Kant (2019) and Dennis (2019) tend to be read as emphasizing that in the sublime one is thinking about oneself rather than oriented toward the external world. But when one is directing attention to oneself, does the self feel greater and more significant, or smaller and less significant?

Dennis offers what can be called an “admiration” theory of the sublime, where the mind has a “conscious view of its own excellency” (Dennis 2019, p. 62). Kant too is sometimes interpreted this way. In contrast, Schopenhauer emphasizes that the experience of the sublime involves a sense of a diminished self and self-loss (Schopenhauer 2019, p. 195).

It remains unclear how much a sense of self loss is salient to the individual or instead a result of *outward* focus on external surroundings. The degree and content of self-awareness during sublime experiences remains controversial. Moreover, the relation between self-directedness (reflexivity) and feeling of self-loss still needs to be worked out (Sundararajan 2002).

Empirical Research

Whereas the sublime has been the topic of a vast body of literature in philosophy for more than two millennia (Clewis 2019a; Porter 2015; Costelloe 2012), empirical research on the sublime has been scarce, beginning only around 2012 (Eskine et al. 2012). But it is fair to say that the sublime is now a topic of interest in psychology (Pelowski et al. 2019; Gordon et al. 2017; Bethelmy and Corraliza 2019; Van Elk et al. 2016). In a neuroscience study inspired by Burke’s distinction between the sublime and the beautiful, Ishizu and Semir (2014) examined the neural correlates of the sublime.

The relative neglect of the sublime is surprising given that awe, a closely related experience, has been intensely studied since about 2003, following a seminal article by Keltner and Haidt. Within the framework introduced by Keltner and Haidt (2003), psychological studies of awe developed in isolation from work on the sublime. But this is slowly changing, as psychologists draw close connections between awe and the sublime (e.g., Gordon et al. 2017, p. 310, p. 311; Bethelmy and Corraliza 2019; Van Elk et al. 2016, p. 11). Pelowski et al. (2019) found that the sublime is correlated with awe. Yet such claims are made mostly in passing. To date, there is little empirical study explicitly devoted to the relationship between awe and the sublime.

Most of the empirical studies of the sublime have been quantitative rather than qualitative. There is not yet a validated scale studying the sublime, leaving studies to introduce ad hoc items on the sublime.

As noted, some researchers claim that the sublime contains a fear component (Eskine et al. 2012; Ortlieb et al. 2016; Ishizu and Semir 2014). But the presence of fear in the sublime remains unclear. Recent studies cast some doubt on whether there is a strong fear component in the sublime (Hur et al. 2018; Pelowski et al. 2019). In the study by Hur et al. (2018), participants thought that they felt fear, but they did not display the typical physiological indicators of fear: participant appraisals differed from physiological responses. The latter result (absence of physiological responses associated with fear) is aligned with “disinterested” or “distancing” theories that downplay the role of fear in the sublime (Kant, Schopenhauer). Likewise, Konečni holds that the sublime can be more easily switched off than other fundamental emotions, a feature that differentiates the sublime from ordinary, uncontrollable fear (Konečni 2005). On the other hand, Gordon et al. (2017) posit a threat-based variant of the sublime, to go alongside the (more widely accepted) positive variant. Pelowski et al. (2019) likewise noticed a possible fear-based variant of the sublime, yet leave the issue open-ended as merely conjectural. Thus, it is at this point still

unclear whether this proposed subspecies of the sublime constitutes a distinct variant, or is instead a different experience altogether, a kind of fear.

How effectively the experience of the sublime can be elicited by artworks or artifacts rather than by landscape and natural scenery is currently under study. Preliminary evidence suggests that nature and natural scenery are better or more paradigmatic elicitors (Pelowski et al. 2019).

Finally, there is some reason to think that sublime experiences can be found across diverse cultures (Konečni 2005). Indeed, descriptions of similar experiences appear in traditional literary texts from around the globe, in India, China, and Japan as well as in the western traditions deriving from ancient Greece and Rome (Clewis 2019a). But the issue awaits further empirical study. While related emotions like awe and “being moved” (*kama muta*) appear to be cross-cultural (Razavi et al. 2016; Zickfeld et al. 2019), the extent to which experiences of the sublime are cross-cultural has only initially been studied using empirical methods (Pelowski et al. 2019).

The Sublime and the Possible

The sublime can be connected to the possible by way of the imagination. As we have seen, several theorists such as Kant (2019) highlight the activation and expansion of the imagination during the sublime. The imagination has been conceived as the ability to represent or conceive what is possible rather than actual (Gendler and Hawthorne 2002; Yablo 1993; Kung 2010). It is the mental capacity for thinking about the possible and what is not present. It thus refers to thinking about many different possibilities, both present and future. This aspect has not been investigated much by psychology studies of the sublime.

To conclude, the intense, mixed aesthetic experience of the sublime has a long and venerable history in philosophy, rhetoric, and literary studies. It is now being more and more studied in empirical fields, using quantitative and qualitative methods.

Cross-References

- [Aesthetics](#)
- [Awe](#)
- [Genius](#)
- [Imagination](#)
- [Possible in Philosophy](#)
- [Wonder](#)

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Surprise

Wendy Ross¹ and Margaret Webb²

¹Department of Psychology, London Metropolitan University, London, UK

²University of Melbourne, Melbourne, VIC, Australia

Abstract

An unexpected or inexplicable event with significance to the self that is accompanied by a strong emotional marker (which can be positive, negative, or mixed in valence).

Keywords

Surprise · Insight · Serendipity · Error

Surprise and the Possibility Space

Possibility refers to that which is not actual. It invites us to consider “what could be,” “what is to come,” “what could have been,” and “what is not / will never be.” In interaction with the world (sometimes only our internal world), possibilities can lead us to “what was unexpected.” These unexpected events, when they are of subjective significance, are marked by the epistemic emotion of surprise.

We can all recognize the feeling of surprise, typically when we encounter something unexpected but which we instinctively believe even if we are curious about its origins. Take for example, the serendipitous surprise of bumping into a dear friend in a country that you did not expect them to be in. A further surprising event, to take a more thoroughly researched example, might be scientists receiving reports of unexpected side effects of drugs which indicate new unanticipated ways that the drug works on the body (Rocca et al. 2019). These reports are not expected, but they trigger curiosity and exploration. Surprise can be not only a marker of this expected violation, but also a marker of unexpected understanding (insight). In the case of the latter, surprise marks both the recognition of prior ignorance and the discovery of new knowledge.

Beyond these broad phenomena such as serendipity, insight, and creativity, surprise underpins and explains aspects of human cognition across several different levels and, we will argue, is fundamental to understanding how we interact with the unpredictable and unexpected nature of the possible (Glăveanu 2021). We go further to suggest that increased attention to the role of surprise in thinking and behavior can support our understanding of how cognition unfolds in the face of uncertainty, allowing us to flesh out and adjudicate between different models at different cognitive levels. In this respect, it is “surprising” that this complex phenomenon has often been relegated to a minor role (Nevo and Erev 2012). We shall end by considering the importance of surprise to the complex interactional process of serendipity and suggest that the importance of unplanned discoveries in human discovery requires us to understand surprise as more than an epiphenomenon of otherwise clear processes.

Levels of Surprise

At a cognitive and neural level, surprise is theorized to underpin many of the most fundamental components of learning and memory (Alexander and Brown 2019). It has been posited as a meta-cognitive signal to update mental models to incorporate new, unexpected information (Munnich and Ranney 2019). At the affective level, surprise

is accompanied by reliable phenomenological markers that can be positively or negatively valenced. As a basic human emotion (Ekman 1992), surprise is universally recognizable, though inherently relational and idiosyncratic.

At the neural-computational level, the term by which surprise is theorized as fundamental to human cognition is *prediction error* (Schultz et al. 1997). Prediction error is the difference between the expected event and the outcome. If there is a discrepancy, then a prediction error occurs and flags requirements for learning. For example, if the prediction is of business as usual, and a change occurs (for example, an “appetitive event,” perhaps a shot of melted chocolate for humans such as these authors), dopaminergic neurons fire. If there is a consistent stimulus that can predict the shot of melted chocolate (for example, a particular sound), then the sound itself (if unexpected) can trigger the dopamine response (with the response having shifted through *error correction* from the reaction to the shot of melted chocolate to the sound). If the sound is made and no shot of melted chocolate is forthcoming, there is a decrease in firing of dopaminergic neurons. This variation in firing of dopamine is proposed to provide the basis of learning and conflict detection (Alexander and Brown 2019), which themselves underlie a vast array of other cognitive processes. Surprise as prediction error is a highly robust finding and has been used to model (as noted above) many and varied cognitive processes.

Nevertheless, how the feeling of surprise enters *awareness* is unclear. We do not stroll through the world constantly surprised that our predictions are correct or incorrect; we learn through the difference between predicted and actual interactions with the world, but each interaction is not overwhelmingly memorable (Fazio and Marsh 2009). Yet moments of surprise *are* memorable and often accompanied by a strong affective component (Ekman and Friesen 1971; Reisenzein and Studtmann 2007). Some models (such as the Alexander and Brown model noted above) propose multiple levels of error detection. In this case, it may be that sufficiently high levels of error detection also trigger the feeling of surprise as we know it, as well as sufficiently high

levels of activation for consciously linking that feeling with the surprising event. It may also be that different magnitudes of prediction error (across multiple circuits) could offer an explanation (Hélie and Sun 2010) in their model of insight, and propose a similar mechanism by which an insight is reached. In either case, it may be that surprise can indicate the point at which relying on an unconscious updating of the current knowledge state surpasses tolerable bounds.

Surprise as a feeling is therefore an important component of what motivates an individual to explore the world and knowledge space. As Clarke (2018, p. 521) suggests: “We humans often seem to actively seek out surprising events, deliberately harvesting novel and exciting streams of sensory stimulation.” This perspective points not only to the importance of surprise in human cognition and behavior but also to our role in generating it through epistemic “foraging.” In this way, rather than casting the human as a passive recipient of the surprising moment, surprise can be seen as part of a process of the flow of actions and events. It is something we actively create through continual explorative action (Austin 1979). In short, surprise in all its forms marks the experience of prodding at an unpredictable world.

Theories of prediction error and surprisal underlie the proposal of active inference (for a recent overview, see Friston et al. 2017), a view of cognition which is increasing in popularity (Hohwy 2013). This theory proposes that cognition is motivated by a desire to minimize prediction error by reducing uncertainty. While surprise is inevitable in an uncertain world, a strict approach to prediction error minimization proposes that an organism will seek to *minimize* surprise through actions which decrease the difference between mental models and the external stimuli, and minimize surprisal in all its forms. There is no clear motivation to increase prediction error because this is cognitively inefficient. We see that we have to account for this *desire* for phenomenological surprise as well as cataloguing moments of neural surprisal. The novelty-seeking nature of phenomena such as creativity then

becomes essential for such models to explain (to avoid the so-called Darkened Room scenario by which an agent ends up in the most predictable environment – a dark room; see Gallagher in prep). Clark (2018) addresses the role of surprise seeking in theories of active inference and ends up accounting for it by recognizing the importance of complex social and cultural environments, what he calls “exotic statistical baths” (p. 532). These environmental structures scaffold epistemic foraging rather than it being something which can be explained by a purely internal model. Ultimately, then the feeling of surprise and its metacognitive and epistemic function cannot be accounted for on a neural level alone and requires us to understand cognition as affective and extended.

The Epistemic Role of Surprise

Surprise refers to a feeling of sharp, sudden, and unexpected expansion of the possibility space. Importantly, this expansion is one which results in an updating of the current knowledge state rather than a rejection of the intrusion (Steinbock 2018). Expressing surprise is not the same as expressing skepticism; we are surprised by something which is evidentially true but which we have not considered before. This is clearly illustrated when we say “That would surprise me if it *were* true” where the level of surprise is related to the truth of the object. We are not surprised by something we do not believe; surprise requires us to grant the truth of the proposition which surprises us. It is this rapid recognition of new knowledge that accompanies the confidence of an insight experience. Surprise is therefore epistemically important: an epistemic feeling.

Epistemic feelings are those feelings which motivate the exploration of the world and knowledge space (Arango-Muñoz and Michaelian 2014). They are elements of the emotional spectrum closely connected to knowledge and knowledge exploration. However, surprise differs from most epistemic feelings because it is initially not directed toward action rather it is in a reaction to actions and events. However, while it is complete

in itself, it is not a short-lived phenomenon with no additional effects. The updating of the knowledge base requires action to incorporate this new knowledge which leads to exploratory feelings such as curiosity and wonder. Johnson-laird and Oatley (1992) argue that Ekman’s basic emotions each serve an important function. In the case of surprise, we suggest the feeling of surprise serves a metacognitive function, that of forcing a reorientation of epistemic activity. It is the cessation and disruption of the existing expectations which marks the threshold into consciousness. Therefore, while surprise has an epistemic element, it is a moment not of exploration (epistemic or otherwise) but rather one of stopping of action and diverting attention.

Importantly, the new knowledge marked by the feeling of surprise comes from the process of interacting with the world (Glăveanu [forthcoming](#)) lending weight to arguments that engagement is important in understanding creativity and innovation. Surprise marks the moment when external stimuli challenge internal stability; it is impossible to be surprised by something of which you are already aware (although you may become surprised by an unanticipated perspective). Instead, surprise marks a moment when the world comes into a novel focus and a person’s perspective on that world changes. It is an epistemic judgment related to prior expectations and the likelihood of an event. It brings into focus the unexpectedness of being in the world and also destabilizes ideas of unrestrained human agency and the imposition of that agency on inert material. In this way, surprise marks the realization that what could be is wildly different from what is. It is, thus, the epistemic feeling most closely associated with the unanticipated possible.

Additionally, this requirement for interaction undergirding the feeling of surprise reminds us of the distributed nature of knowledge. The feeling of surprise is a marker of the moment of incongruence between external stimuli and a mental plan or perspective forcing it to be updated. As Gerlain (2019) notes, it reminds us of an implicit world outside the world of our current experience. When it comes to the relationship between surprise and the possible, surprise marks the moment

when the unexpected, unconsidered, and seemingly impossible are recognized as possible and supports the disambiguation of the possible from the merely probable.

Surprise as a Necessary Component of Insight

Moments of insight are universally recognized as instances of realization in which feelings of sudden confidence arise for an answer. This answer may have been actively searched for (e.g., when trying to solve an ill-defined problem in computer programming), or not actively searched for (e.g., realizing the unsought solution to an issue while showering). The definitional components of the feeling, whether accompanied by pleasure or dismay, are that of *sudden confidence* (Cushen and Wiley 2012). Moments of insight provide a disjunct between the previous representation of the problem and the current representation of the problem, with no conscious memory of the problem-solving pathway between the two.

The feeling accompanying moments of insight, that of surprising certainty in a solution, is remarkably difficult to elicit on a reliable basis, partly because, as noted above, surprise is relational. The feeling of insight is generally termed an “aha moment” in the relevant field: This is the feeling of sudden confidence in the answer (see Insight, this volume). Danek et al. (2014) identified several aspects of the feeling of insight phenomenology of which surprise was the second strongest. This confirmed previous theorizing that placed surprise as a key marker of the insight experience. For example, Gick and Lockhart (1995) suggest that the transition to a solution state which marks the moment of insight is marked by surprise that the representation required to solve the problem is different to the one held in mind by the problem solver. Surprise is also closely related to insight radicality (Jarman 2014), that is, the difference between the previous (unhelpful) problem representation and the novel one. Jarman found that increased radicality predicted the intensity of the insight experience leading us to suggest increased surprise is key to the experience.

Despite being a cornerstone in the phenomenon of insight (as a sudden and untraceable moment of realization that the original

representation of a problem was incorrect), surprise is rarely investigated as an emotional component of problem solving. However, it could be that it provides an indication of the underlying cognitive processes. There is some debate about what the cognitive processes are that underlie insight. In brief, the question is whether insightful problem solving relies on a particular special process or whether it comes from the unconscious application of the same processes which underlie all cognition (Gilhooly et al. 2015). Although it seems likely that the answer relies on a mix of both, it could be that surprise indicates which is most dominant at any one time.

In order to solve a problem with insight, a problem solver must have an unpredicted shift in understanding. The nature of this shift is currently unclear – does it represent a shift in the problem representation or a shift in the understanding of the way to solve the problem. In this way, surprise is obviously critical to theories which propose sudden representational change and non-monotonic problem solving (Danek 2018) because it marks a sharp change in the representation from previous iterations. In contrast, current theories of incremental progress (such as outlined by MacGregor et al. 2001) fail to address the feeling of surprise, but it may be that surprise in this model occurs at a different point, that is, the point at which the problem solver realizes that the approach they were using to solve the problem will not work, so-called criterion failure. In this case, surprise is not generated by the solution but by the moment that it becomes apparent that the confidence in the previous solution attempt is misplaced. A fuller appreciation of the epistemic role of surprise could scaffold further attempts to adjudicate between the two theories.

Surprise as a Threshold Marker: The Case of Serendipity

We have all had moments of serendipity – a moment of good fortune which seems completely suited to us. Serendipity refers to the interaction of an accident and the personal “sagacity” to exploit that accident. The etymological roots of accident imply something entering from outside the system. It comes from the Latin *accidere* meaning “to

fall down, impinge on, be heard, happen” (Merriam-Webster), and serendipity is firmly tied to the “act of noticing” (Rubin et al. 2011). At the heart of the notion of a serendipitous accident is that it comes from outside the existing cognitive system, involves a disruption, and that this disruption is significant enough to be noticed. These aspects can be collapsed into one: A serendipitous accident is surprising. In this way, much like for insight, surprise is at the heart of the moment of serendipity.

As with insight, surprise also gives us an interesting perspective on the mechanisms which may underlie serendipitous cognition. In this case, we are returned to the notion of a threshold which is marked by the feeling of surprise. Serendipity is a disruptive phenomenon requiring the agent to turn away from one path to follow another prompted by something unexpected. Serendipity is necessarily sparked by an accident (Makri and Blandford 2012; McCay-Peet and Toms 2015; Merton and Barber 2004). However, human activity takes place against a continual flow of accidents so the occurrence of an accident cannot be enough to spark the sense of serendipity, rather an accident is something which acts as a “game changer” (Arfini et al. 2018), and it is this which requires the element of surprise. It is not yet clear what makes an accident become important enough to be selected and enacted (see Ross, 2022), but it may be an investigation into the nature of surprise can lend support to attempt to understand these complexities.

In other words, because serendipity is something which is consciously experienced, the accident must be noticed consciously and assessed as interesting enough to be exploited. Models of surprise as a metacognitive signal can give us information on how that assessment takes place. Take, for example, the model proposed by Munnich and Ranney (2019): They offer three responses to learning new surprising information: accommodating it, treating it as an anomaly, and rejecting it. Each of these consists of three aspects – the existing belief network, the event, and the action which is undertaken. We reject an idea when it is too difficult to explain within the

context of our own belief network. As Arfini et al. (2018, p. 5) write:

Fleming’s “Oh!” reaction was when he managed to frame and understand the antibiotic effect of a mold. He did not enter his laboratory to find a moldy culture singing the chorus of Mamma mia!: that would have sparked another kind of reaction.

Things which are too distant from our belief network, where the radicality is too great, are not drawn upon to update it. The same is true of serendipitous accidents; those which fall outside the realm of what we see as possible are not followed up.

Similarly, there is a resource cost to exploiting accidents, and option D in the model encompasses the idea that an interesting anomaly is noticed, but it is not considered interesting enough to invest the time and cost. Barber and Fox (1958) tell the story of two scientists who are surprised by the same thing, but one has the resources and time to follow it up and the other does not. The realization that surprise-driven curiosity has a cost is crucial to understanding why some accidents are exploited and others are not.

In other words, serendipitous surprise relies on the event being sufficiently close to what the system views as possible; even if the knowledge is not there before, it requires the deviation from an existing theory rather than uncontextualized knowledge (Yaqub 2018). This is because serendipity requires the enacting of the unplanned event, and the boundaries of the system must be flexible and dynamic in order to assimilate this new knowledge. This is a quasi-liminal knowledge state which requires both expertise (to recognize and assimilate) and ignorance (to experience surprise). An explanation for the role of serendipity could be related to the threshold required to experience surprise.

Surprise and The Possible

As we noted in our opening paragraph, possibility refers to that which is not actual. Part of the difficulty in conceptualizing the use of other possible worlds is that those worlds are often rooted in our existing experiences. Possibility thinking is

best conceived of as a process, a continuous redefining and moving forward through adjacent possibilities to generate novel possibilities. Surprise provides an emotional identifier of when the possible has become internally actualized, as a marker of how we can interact with hitherto unanticipated domains: the marker of the actualized and expanded possible.

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Surrealism

Lisa Lipinski
Columbian College of Arts and Sciences, George Washington University, Washington, DC, USA

Abstract

Surrealism, an intellectual and artistic movement, that originated in Paris before attracting followers around the world, was envisioned as a means of knowledge about oneself through the unconscious, the marvelous, the dream, and the simulation of hallucinatory states of mind. Surrealism was defined as “pure, psychic automatism” by the French poet and critic André Breton (1896–1966) in *The Manifesto of*

Surrealism (1924). Automatic techniques were devised in writing, drawing, painting, and even photography as a way to bypass rational control and subvert bourgeois social conventions, in order to foster creativity and empower the possibility of new thought and actions consistent with new values. Following a summary of the state of research on Surrealism, this entry will review the founding principles of Surrealism, and trace a brief history of Surrealist art and theory as it relates to the possible.

Keywords

Art · Assemblage · Automatism · Chance · Creativity · Desire · Dreams · Exhibition · Painting · Photography · Poetry · Sculpture · Unconscious

Research on Surrealism

Maurice Nadeau’s *History of Surrealism*, first published in French in 1944 and in English in 1965, is a classic account of the complex movement, tracing its evolution from Dada through the various phases up to the start of World War II, and includes manifestoes and documents (Nadeau 1989). In her overview of Surrealism, Anna Balakian focused on the poets of the movement, Breton, Aragon, Éluard, and Reverdy, placing them in the context of early twentieth-century Paris (Balakian 1986). The literary scholar Mary Ann Caws has written on Surrealist poetry (Caws 1970), compiled an anthology of writings, and has written on the significant contribution by women artists (Caws 1995). Marcel Jean wrote the first comprehensive book on Surrealist painting, from its precursors to the present day (Jean and Mezei 1960). Rubin’s *Dada and Surrealist Art* is a classic text with an extensive chronology of events, publications, and activities (Rubin 1968). Gérard Durozoi provides the most comprehensive history of the Surrealist movement, starting with its origins in the 1920s to its decline in the 1950s and 1960s. The book is well-illustrated with color images and a vast amount of documentary and visual evidence related to all facets of the

movement, from literature and philosophy to painting, photography, and film. *History of Surrealism* includes biographies of the major and minor figures of the movement as well as a comprehensive bibliography of Surrealism, divided into sections related to theme, specialized studies, exhibitions, and geographical areas. Susan Laxton demonstrates the importance of play in the surrealist methods and explorations into the nature of subjectivity (Laxton 2019) (see entry ► “Play”).

Anthologies of Surrealist writings provide primary sources for further study: *The Surrealism Reader: An Anthology of Ideas* (Ades et al. 2015), André Breton’s *Manifestoes* (Breton 1972) and *What is Surrealism?* (Breton 1978), and Georges Bataille’s *Visions of Excess, Selected Writings* (Bataille 1985).

Surrealist exhibitions were essential to the ideology and expression of the movement in its time and are briefly discussed at the end of the essay. Recent exhibitions provide new insights into the importance and legacy of Surrealism and are equally valuable sources of information about neglected artists. *L’Amour fou: Photography and Surrealism* examined the erotic, disorienting, and exquisite photographs produced by the Surrealists, showing the crucial role photography played in the movement. *Anxious Visions: Surrealist Art*, a ground-breaking study, considered the visual arts of surrealism in the historical climate of the interwar period (Stich 1990). The Surrealists produced a wide range of disturbing imagery which drew on their collective interests in the machine and modernity, non-Western cultures and tribal art, and contemporary politics and the rise of fascism. *Surrealism: Desire Unbound* explored the Surrealists’ vision of love, desire, sexuality, and liberty in surrealist art in words and images (Mundy et al. 2001). The catalogue featured essays by leading scholars of Surrealism. A recent exhibition, *Angels of Anarchy: Women Artists and Surrealism* explored the contribution of women artists to Surrealism (Allmer et al. 2009). The exhibition *Monsters and Myths: Surrealism & War in the 1930s and 1940s* examined Surrealist masterworks of the 1930s and 1940s by artists such as Salvador Dalí, Joan Miró, Max Ernst, and

André Masson, and presented the movement through the lens of war, violence, and exile (Shell et al. 2018).

Surrealist Art and Theory

Surrealism emerged in 1924 after a 5-year gestation period as a response to World War I and the crisis in Western culture that followed it. For the Surrealists, the experience of chaos and disorder, irrationality, and destruction of 4 years of total and devastating war, challenged and undermined traditional values of reason, logic, faith in God, and allegiance to the nation state. In place of the valorization of binary oppositions, Surrealism celebrated difference and cultivated the conjunction of different things and realities, taking inspiration from the Comte de Lautréamont’s famous line “...[beautiful as] the chance juxtaposition of a sewing machine and an umbrella on a dissecting table!” (de Lautréamont, *The Songs of Maldoror*; Canto VI, verse 3). In “Beyond Painting,” (1936) Max Ernst described the surreal as “the coupling of two realities, irreconcilable in appearance, upon a plane which apparently does not suit them” (Ernst 1948, p. 13). In *The First Manifesto of Surrealism*, French poet and visual artist André Breton wrote: “I believe in the future resolution of these two states, dream and reality, which are seemingly so contradictory, into a kind of absolute reality, a surreality, if one may so speak” (Breton, p. 14). From 1924 to 1966, new methods of art production were devised by artists and writers to bypass rational thought and traditional aesthetics. As a broad, collective, and multidisciplinary movement Surrealism opened up new possibilities of thought which the surrealists hoped would incite a social and political revolution.

On 11 October 1924, the Bureau of Surrealist Research opened in Paris with the express purpose of gathering information, using all possible methods of experimentation which would express the unconscious activity of the mind. The solicitation to the general public was open-ended and not prescriptive. The surrealists were looking for new ideas and, most notably, dreams, on which to initiate their revolution. Surrealism would be a collective endeavor, not focused solely on the production

of art or literature, but on creating a new way of being in the world, starting with automatism. Inspired by the kind of automatic writing practiced by spiritualists, the practitioners of automatism would fall into a self-induced trance in which they would write, draw, or answer questions, outside the usual constraints of logic and reason. *Cadavre exquis* (exquisite corpse) was a collaborative drawing or writing approach used by the surrealists to create bizarre and intuitive images. The results were often published in Surrealist journals (see entries ► “[Dreams](#)” and ► “[Consciousness](#)”).

The First Manifesto of Surrealism, written by André Breton (1896–1966), began with the observation that “absolute rationalism...is still in vogue” and the excessive attention to facts came at the expense of the imagination. He wrote: “The imagination is perhaps on the point of reasserting itself, of reclaiming its rights” (Breton, *Manifesto*, p. 10). He praised Sigmund Freud for his contributions to understanding psychological forces at work in shaping human behavior and social interactions, and the importance of dreams (see entry ► “[The Possible in the Life and Works of Sigmund Freud](#)”). In the *First Manifesto of Surrealism*, André Breton defined this new movement:

SURREALISM, n. Pure psychic automatism, by which it is intended to express, either verbally, or in writing, or in any other way, the true functioning of thought. Thought expressed in the absence of any control exerted by reason, and outside all moral and aesthetic considerations. *ENCYCLOPAEDIA. Philosophy.* Surrealism rests on the belief in the superior reality of certain forms of association hitherto neglected, in the omnipotence of the dream, and in the disinterested play of thought. It tends to ruin, once and for all, all other psychic mechanisms and to substitute itself for them in solving all the principle problems of life (Breton 1972, p. 26).

In “Une Vague de rêves” (A Wave of Dreams, 1924), an important historical and theoretical text on Surrealism, the French writer Louis Aragon (1897–1982), one of the three founding members of Surrealism, along with Breton and Philippe Soupault, emphasized the importance of chance, illusion, the fantastic, and dreams. He described how the

surrealists made contact with the unconscious, producing images which became perceptible as long as one was in touch with the hallucinatory phenomena. “In the grip of a tremendous momentum, we spent more and more time on the practices which led us into our strange inner lands. We delighted in observing the curve of our own exhaustion, and the derangement which followed. For then the marvelous would appear” (Aragon 1924, p. 100).

Everything is possible in the dream, which is the vivid manifestation of unconscious thoughts. The *Manifesto* provided an outline of the goals and aspirations of Surrealism – to liberate humanity and expand the realm of thought beyond the immediate and sensate reality. The Surrealists published journals devoted to their experimentations and as a means of disseminating ideas and theories, starting with *La Révolution surréaliste*, which was published from 1924 until 1929, which included descriptions of dreams, automatic texts, poems by Paul Éluard and Robert Desnos, drawings, and photographs. *La Révolution surréaliste* was modeled on the conservative scientific journal *La Nature*, which provided the surrealist journal with an appearance of objectivity and evidence of research, which demonstrated the serious nature of their ambitions and goals. Throughout the vital years of the movement, periodicals spread the word on Surrealism, taking different formats, but all featured art, photography, and writing, including: *Le Surréalisme au service de la révolution* (1930–1933), *Minotaure* (1933–1939), *VVV* (1942–1944), *View* (1940–1947), and *Documents*, a Surrealist magazine edited by Georges Bataille, published in Paris from 1929 through 1930, which ran for 15 issues.

Surrealism quickly attracted visual artists to the movement, leading Breton to consider whether oil painting, with its slow and often laborious process, was capable of capturing the dream or tapping the unconscious. Breton’s essay “Surrealism and Painting” addressed the question of whether the plastic arts could be considered surrealist. He selected the painting of Pablo Picasso as a model, for the latter’s rejection of mimetic representation in the development of Cubist painting and the new medium of collage. Picasso

showed that an artist could liberate painting from traditional forms and create a new vision of the world.

Visual artists employed automatic methods as a way of extending what was possible in art, producing widely varying styles. The German painter, printmaker, and sculptor, Max Ernst (1891–1976) explored automatic methods of creating an image, in 1925, with a series of 34 *frottage* drawings, which he assembled as a group and exhibited with the title, *Histoire naturelle*. He made rubbings of wood and other objects, transposed the rubbings to canvas, thereby inventing a new mental process of creating hypnagogic visions. Between 1921 and 1924, he produced a series of paintings evoking the irrational qualities of dreams, drawing on incidents and images from his childhood. He was endlessly inventive in creating new forms through techniques like *frottage* but also abstracting objects appropriated from mass-produced volumes, like newspapers, journals, and ethnographic publications. In 1929, he composed a “novel” in collage, *La Femme 100 têtes* (“The woman with 100 heads” or, as a pun, “the woman with no head”) which consisted of 124 captioned pictures laid out in a nonlinear and illogical sequence of evocative and ambiguous images. He created the novel by adopting images from late nineteenth-century illustrated magazines and pasting them together, thus bringing two different realities into the same pictorial space. In his collages, Ernst abstracted figurative elements from their original context to create new forms, in which the familiar became strange and fantastic. Later in his career, he experimented with new automatist techniques, inviting the element of chance into the creative process. For example, he dripped paint from a can that he swung over the canvas. Spanish painter and sculptor, Oscar Domínguez (1906–1957) joined the Surrealists in 1935. He invented a technique called decalcomania, which involved the blotting of a gouache drawing, by pressing paper against the original drawing, turning it into an ambiguously suggestive image. Ernst also employed the technique, rubbing one canvas against another covered with oil paint, which he

used to create otherworldly landscapes and dream-like images (see entry ► “[Arts Education](#)”).

André Masson (1896–1987), French painter, draughtsman, printmaker, and stage designer, whose automatic drawings were made quickly and without forethought or rational control caught the attention of Breton who invited him to join the group. Masson took this technique a step further into painting, when he sprinkled colored sands on canvas, which adhered to the automatically drawn lines of glue. In *Battle of Fishes*, 1926, (Fig. 1) poetic images emerged as if by magic from the suggestive and unpremeditated forms taken by the texture and materials of the sand paintings, offering a close visual counterpart to automatic writing. Joan Miró (1893–1983), Spanish painter, sculptor, printmaker, and decorative artist never officially joined the Surrealist movement, claimed by Breton nonetheless, his paintings of fantastic imagery of biomorphic forms and linear elements were wholly original, inventive, and mostly abstract. He devised a rich system of graphic notations, words, figures, drawn from memories of his childhood, sometimes based on hallucinations, often beginning with hastily drawn sketches which he worked into paintings. The French painter Yves Tanguy (1900–1955), a self-taught artist, joined the Surrealists in 1925, devised his own technique and style. Working with a diluted form of oil painting, he layered amorphous shapes on atmospheric backgrounds, later adding shadows to create otherworldly scenes populated by abstract forms and figures. Tanguy influenced a younger generation of Surrealists who adapted automatism into their own styles: Wolfgang Paalen, Roberto Matta, Gordon Onslow-Ford, Esteban Francés.

An autonomous Surrealist group formed in Belgium in 1925, with René Magritte (1898–1967), the sole painter in the group, at its center. Magritte approached painting as a philosophical and poetic art. He employed an illusionistic style to create the mystery of dream-like images out of ordinary objects. He developed his own methods, seeking to discover hidden affinities between things by altering their substance, scale, or spatial arrangements. He explored the relationship of



Surrealism, Fig. 1 André Masson, *Battle of Fishes*, 1926. Sand, gesso, oil, pencil, and charcoal on canvas, 14 1/4 × 28 3/4" (36.2 × 73 cm). The Museum of Modern

Art, Purchase. © 2020 Artists Rights Society (ARS), New York / ADAGP, Paris)

words and images, contributing an important pictorial essay, "Les mots et les images" to the final issue of *La Révolution surréaliste* in 1929.

The Spanish Catalan painter, writer, and filmmaker, Salvador Dalí (1904–1989) developed what he called the "paranoiac-critical method" to create hallucinatory dream worlds in paintings filled with his own auto-erotic symbols. The method involves a kind of controlled delusion through which one sees resemblances between disparate things (see entry ► "[Illusion in Art](#)"). Many of his works contain his famous double images, that is "a representation of an object that it is also, without the slightest physical or anatomical change, the representation of another entirely different object, the second representation being equally devoid of any deformation or abnormality betraying arrangement" (Caws 2001, p. 180) (Fig. 2). In *Swans Reflecting Elephants*, 1937, (Fig. 2) three graceful swans float on a placid pool above the reflections of three different creatures –

elephants. The necks of the swans become the trunks of the elephants below them. According to Sigmund Freud, dreams reveal our repressed or hidden desires, unfulfilled wishes. The paranoiac-critical method was a means of destabilizing the world and creating the possibility of seeing things as new or potentially something else.

From the 1930s onward, as the movement expanded its geographical scope, Surrealism attracted a significant number of women, who were often in relationships with the male artists and writers, frequently serving as model or muse. Surrealism offered women the freedom to explore issues related to their own identity and sexuality, whether or not they officially joined the movement. In the literary and visual arts, women delved into their own unconscious and dreams, producing works in which the female body expressed a unique and inimitable psychic power and creative energy. Leonor Fini (1908–1996), French painter, stage designer, and illustrator of Argentine birth,



Surrealism, Fig. 2 Salvador Dalí, *Swans Reflecting Elephants*, 1937. Oil on canvas, 51 × 77 cm. Coll. Cavalieri Holding, Geneva, Switzerland © 2020 Salvador Dalí, Fundació Gala-Salvador Dalí, Artists Rights Society)

painted sphinx-like women and female nudes in a meticulous illusionistic style. The Spanish painter Remedios Varo (1908–1963) created hybrid creatures like the human-owl figure in *Creation of the Birds*, 1957, (Fig. 3) who sits at a table drawing birds which take wing upon creation. She is surrounded by magical and fantastical beings as well as the instruments of her alchemical art. Claude Cahun (1894–1954), French photographer, writer, and sculptor, changed her name in 1917 from Lucy Schwob. Cahun explored the fluidity of gender in photographs of herself performing different character roles, a weight-lifter, aviator, dandy, and doll. Leonora Carrington (1917–2011), Mexican painter, sculptor, and writer of English birth, developed an illusionistic Surrealism based on autobiographical and occult symbolism with fantastic creatures in bizarre settings. The English painter Eileen Agar (1899–1991) experimented with automatic techniques and new materials, making collages and objects, which were included in Surrealist exhibitions. Agar described her approach in terms of the ludic: “To play is to yield oneself to a kind of magic, and to give the lie to the inconvenient

world of fact, and the hideous edifice of unrelieved utility. In play the mind is prepared to accept the unimagined and incredible, to enter a world where different laws apply, to be free, unfettered” (Caws, p. 4–5). Mythic female figures, like the nymph, the witch, the fairy, the crone, whose powers derive from their mutability – appear frequently in paintings by Carrington, Fini, and Dorothea Tanning (see entry ► “Myths”). All of the Surrealists were obsessed with metamorphosis and latent eroticism; the women developed their own eccentric creatures and iconography which was equally, if not more, memorable, disruptive, and haunting (see entry ► “Imagery”). The American painter, sculptor, illustrator, stage designer, and writer Dorothea Tanning (1910–2012) was inspired to become a painter after she saw the exhibition *Fantastic, Art, Dada, Surrealism* at the Museum of Modern Art, New York, in 1936. Tanning’s first surrealist painting *Birthday*, 1942 (Fig. 4) features a half-nude figure, a self-portrait, clad in a dress whose skirt is composed of writing green bodies. Beside her is a fantastic furry creature, her familiar. The open door reveals a succession of open doors which lead the viewer’s gaze

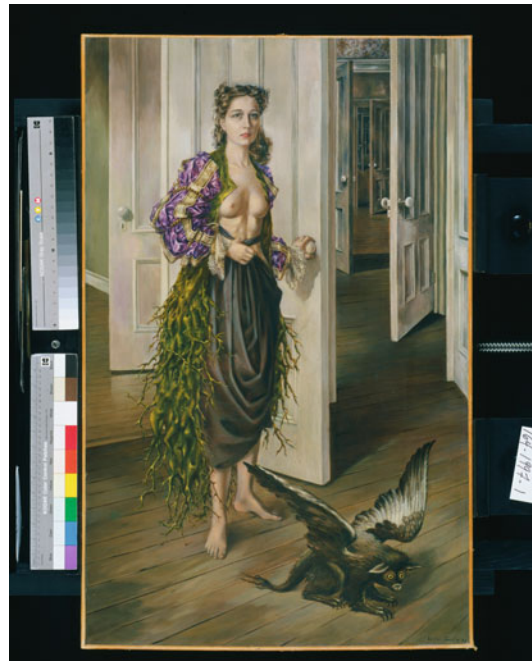
Surrealism, Fig. 3

Remedios Varo,
Creation of the Birds, 1957.
 Oil on canvas. Museo
 Nacional de Arte Moderno,
 Mexico City, D.F., Mexico
 © 2020 Remedios Varo,
 Artists Rights Society
 (ARS), New York /
 VEGAP, Madrid)



into the ambiguous depths of the canvas, serving as a metaphor for the unconscious or the imagination. The mirror behind the figure further complicates the pictorial space. “I wanted to lead the eye into spaces that hid, revealed, and transformed all at once and where there would be some never-before-seen images, as if it had appeared with no help from me,” she wrote (Tanning 2001, p. 214). Her future husband, Max Ernst, saw the painting and gave it the title, *Birthday*.

In March 1930 an exhibition of collages was held at the Galerie Goemans in Paris. Louis Aragon wrote an essay for the catalogue, “La Peinture au défi” (The Challenge of Painting), in which he revived the concept of the marvelous as a “dialectical event” and a means of liberation (Éluard and Hultén 1990). He offered this hypothesis: “the rapport born of the negation of the real by the marvelous is essentially ethical in character, and the marvelous is always the materialization of a moral symbol in violent opposition to the morals of the world in which it surges forth” (Aragon, in Pontus Hultén 1990, p. 48). According to Aragon, collage was a “poor” medium in contrast to painting, because it did not require technical skills and it was made of inexpensive, found materials. The



Surrealism, Fig. 4 Dorothea Tanning, *Birthday*, 1942. Oil on canvas, 40 1/4 × 25 1/2 inches (102.2 × 64.8 cm). Purchased with funds contributed by C. K. Williams, II, 1999 (1999-50-1). Philadelphia Museum of Art, Philadelphia, U.S.A. © 2020 Artists Rights Society (ARS), New York / ADAGP, Paris)

avant-garde medium of collage offered Surrealism a new method of composition, specifically, the act of bringing disparate things together, thereby producing disjunctive and unexpected results.

Beyond the visual arts, the surrealists conducted experiments in shared or collective writing. *L'Immaculée Conception*, (The Immaculate Conception) a poem co-written by Breton and Paul Éluard, with an illustration by Dalí, offers a model of an anti-hierarchical method, one which transcended the individual and his/her preferences for a more egalitarian and collective practice. In his preface to the Japanese translation of *L'Immaculée Conception*, Éluard wrote: "To be two to destroy, to build, to live, is already to be everyone, to be the other to infinity and no longer oneself. . . A thoughtful and thorough examination of the possibilities of thought. . . of thought which is common to all, renders vain any hierarchy among men. Between man and woman, it would be the very negation of their own roles" (Durozoi 2009, p. 196) (see entry ► "Poetry").

Objective chance was another surrealist method used to tap into the unconscious. Breton and others frequently visited flea markets, hoping to find objects which offered the possibility of expressing inner desires. In 1934, Breton found such an object at the Puces de Saint-Ouen flea market in Paris – a long, rounded wooden ladle with a shoe shape carved into the base of its handle. For days before this outing, he had the phrase "le cendrier de Cendrillon" (Cinderella's ash tray) running through his mind. The tiny shoe at the base of the spoon's handle suddenly revealed its meaning. Man Ray photographed the found object, which Breton called the "slipper spoon," thus revealing the latent and powerful connection between an object found by chance and the unconscious thoughts of the poet.

The Surrealists explored themes of desire and love with humor and passion, making works which challenged strict censorship laws in France, the influence of the Catholic Church, legal and social inequalities, the political and ethical dilemmas posed by the rise of fascism and communism. In 1929, the final issue of *La Révolution surréaliste* posed a question to the

public: "what sort of hope do you place in love?" Paul Éluard's volume of poetry *Facile* (1935) consisted of lyrical evocations of his lover juxtaposed with Man Ray's photographs of the nude body of Nusch, his companion at the time. Breton's second book, *Nadja*, published in 1928, is considered to be a demonstration of Surrealism. *Nadja* recounts his relationship with an unpredictable and unconventional young woman, which was a pretense to an exploration of Breton's own self-identity. The unconventional and complex narrative of *Nadja* blends fact with memory and imagination, and with other writings by Breton. Roger Cardinal calls *Nadja* "a dossier on surreality, a treatise on chance and desire, a meditation on personal identity, an inquiry into paranormal experience, a narrative of a love-affair, an oblique manifesto about a certain way of living, an anti-novel, and an exercise in the stylistics of Enigma" (Cardinal 1987, p. 12). Both men and women produced provocative images of human sexuality and desire in painting, photography, and sculpture. René Magritte's *The Lovers* (1928) depicts a man and woman, with enshrouded heads, locked in an erotic embrace. Hans Bellmer (1902–1975) constructed a life-size doll, an articulated construction of wood, plaster, metal rods, nuts, and bolts, which represented a young girl and embodied the qualities of a surrealist object: subversive and erotic, sadistic and masochistic. In 1934, Bellmer published photographs of the doll with a prose poem as *Die Puppe* which drew the attention of the Surrealists who were exploring the multivalent possibilities of sculptural objects.

The surrealists invented a new form of sculpture, called assemblage, which offered new possibilities for creative interventions in life. Breton developed the theory of objective chance in which objects encountered in everyday life assume a kind of mystical presence, offering insight like a waking dream. In his essay "The Surrealist Situation of the Object," he wrote: "Thus I for my part believe today in the possibility and the great interest of the experiment that consists of incorporating objects, ordinary or not, within a poem. . ." (Breton 1972, p. 263). Always

mindful of the effect of a proposed new method, Breton noted that the object or visual element in a surrealist poem would give the reader a novel sensation, disturbing and complex. The goal of the object was “To aid the systematic derangement of all the senses... it is my opinion that we must not hesitate to *bewilder sensation...*” (Breton 1972, p. 263). Meret Oppenheim’s *Objet* (*Le Déjeuner en fourrure*), 1936, a fur-covered cup, saucer, and spoon, is the quintessential Surrealist object, evoking tactile sensations, which may attract or repulse, and connotations related to both fashion and luxury. Dalí attached the body of a lobster to a black telephone, thus producing an object both playful and disturbing. The crustacean’s sexual parts, located in the tail, are directly over the mouthpiece. Lobsters and telephones had strong sexual connotations for Dalí. Many surrealists, especially in the 1930s, began arranging objects in combinations which expressed unconscious desires and poetic associations. These “symbolically functioning objects” were exhibited at the Galerie Ratton in 1936 beside ritual objects from African and Oceanic cultures.

Bellmer’s photographs were equally important to Surrealism as the doll itself. He photographed the doll in black-and-white, then hand-tinted areas to heighten the ominous atmosphere in which the dismembered body appears to have been the victim of a crime. The art historian Hal Foster has written that “the dolls may go inside sadistic mastery to the point where the subject confronts its greatest fear: its own fragmentation and disintegration” (Mundy et al. 2001, p. 208). In “The Photographic Conditions of Surrealism,” Rosalind Krauss argues, photography was central to Surrealism, because it has the capability of recording the automatic writing of the world (Krauss 1981). “Surreality *is*, we could say, nature convulsed into a kind of writing” (Krauss, p. 29). Man Ray (1890–1976) made photographs, sometimes without a camera which he called “rayographs,” of household objects, some of which he labeled as “male” or “female”. With his assistant, the photographer Lee Miller, he produced solarized images of nudes and objects, which were ambiguous and uncanny. Maurice Tabard (1897–1984) used a variety of techniques

which involved chance or automatism, procedures such as double exposure, combination printing, and montage. The manipulated photograph introduced an element of the surreal and fantastic into a medium known for its indexicality, that is, a link with the real. Many different kinds of non-artistic photographs, from ordinary snapshots to police photographs, were published in Surrealist journals, with new captions (not original) in order to give the photographs new and unexpected meanings and thereby serve the surrealist agenda of disrupting social conventions.

Conclusion

The Surrealists took a stand against all forms of social and political control, from Fascism to Colonialism, using art and literature as a tool for liberation. One of their most successful strategies for social intervention was the Surrealist exhibition, staged in venues large and small with paintings, objects, non-art elements such as beds, braziers, and mannequins, miles of string, and bags of coal suspended from the ceiling, in order to create an immersive and interactive environment in which one could leave reality behind and discover aspects of one’s own self-identity (Jolles 2013). Surrealist exhibitions were deliberately disorienting, possibly provocative of anxiety as well as desire, both stimulating and revelatory of the power of art to change life and the power of the collective aesthetic experience (Mundy et al. 2001, p. 277).

After World War II, Breton returned to Europe, from his exile in the United States, and renewed surrealist activities in Paris. The movement drew new members into its sphere of influence from around the world. Artists employed some of the original automatic processes for generating new images. Surrealism’s ideas – the importance of the unconscious and the imagination, and techniques, like chance, automatism, and games like the exquisite corpse, influenced many of the postwar art movements and left an enduring impression on popular culture with the word itself “surreal” entering the lexicon to describe something which

is seemingly impossible if not improbable, or strange yet familiar. Surrealism, as discussed here, was characterized by the open-ended exploration of the relationship of the self and world which lay beyond immediate reality. Their investigation of new methods of creativity depended upon social interaction and the use of cultural resources to expand human possibility in thought and action.

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Symbols

Brady Wagoner

Department of Communication and Psychology,
Centre for Cultural Psychology, Aalborg
University, Aalborg, Denmark
Institute of Psychology, Oslo New University
College, Oslo, Norway

Abstract

The word “symbol” is derived from a Greek word meaning “to throw together.” It points to the fact that human beings have developed a way of transforming simple sensory material into a medium to represent something else. The medium becomes essentially human culture, which evolves over time. From this perspective, symbols can be broadly defined as *the capacity of expressing or representing one thing in terms of another*. For example, flag represents a nation; an animal the tribe or group; an antique clock the deceased relative who owed it; a swastika evil in the West and religion in the East; and a dream psychic conflicts or a future yet to come. While this general definition and the centrality of symbols for understanding human beings is generally agreed, there are nonetheless a variety of approaches available to the subject in the literature, each emphasizing different qualities in human life. This entry will review three key approaches.

Keywords

Group processes · Play · Displacement ·
Symbolic remove · Protest

Introduction

Human beings should be defined as an “*animal symbolicum*,” a symbolic animal. Ernst Cassirer (1944) forcefully made this claim in his *Essay on Man*, arguing that philosophers’ earlier designation of “rational animal” was incomplete, as it confused a part for the whole. Few would, for example, label myths as rational, yet they have been more characteristic of human beings than philosophical systems or scientific analyses. Side by side with human conceptual reasoning we find poetic imagination, focused less on the expression of thoughts and ideas than on feelings and affects. The notion of symbol, in contrast to rationality, captures the rich variety of human life and its cultural manifestations. It is the key to unlocking the development of human civilization, as it takes form in language, myth, art, religion, and science. Cassirer himself analyzed how objects of human experience only emerge through these different “symbolic forms” and cannot be understood independently of them.

According to him, it is through the *mediation* of symbols that humans have irreversibly separated themselves from the *immediate* environment. There is no neutral or transparent medium for understanding the world, but rather each symbolic medium shapes reality to a particular form. As such, we are partly in dialogue with ourselves and our tradition when we explore objects of the world. Symbolic mediation has opened up a world of culture, a space of play and *possibility* for human beings. With symbols humans have progressively innovated new ways of interpreting and acting on the world and themselves. This entry will outline three classic approaches to symbols and how they open up different realms of the possible. They are symbols as: 1) motivated resemblances, 2) displaced desire, and 3) representations of a group. While not exclusive, these approaches capture a range of different research

areas, such as the development of children’s thought, personal meaning making, and collective bonding, respectively.

Symbols as Motivated Resemblances

The beginnings of representation require the support of a system of usable ‘signifiers’ at the disposal of the individual, and for this reason the child’s thought is much more symbolic than that of an adult (in the sense in which symbol is opposed to sign). (Piaget 1945/1962, p. 273)

In his *Course of General Linguistics*, Ferdinand de Saussure (1916) outlined a revolutionary approach to language as a system of signs. For him, a sign is composed of a *signifier* (sound image) and *signified* (concept), such as the word “tree” in English or “arbor” in Latin being used to stand for the concept of a tree. These parts are two sides of the same coin, differentiated from within and automatically associated in the brain of each speaker. However, signs take their meaning or value from their difference and relation to other signs within a system of language. Something is a tree because it is not a bush or a shrub. Saussure’s term “value” implies exchange value with other signs within a system, which is shared among speakers of a language community.

The defining feature of a sign for Saussure is its “arbitrary” character, meaning that signified and signifier are connected by a relationship of social convention rather than that of resemblance. The succession of sounds “t-r-e-e” has no intrinsic similarity to the concept of a tree, and as such there is nothing that would prevent it from having another *signifier* except force of social habit. There are, of course, exceptions to the arbitrariness of language that Saussure must deal with, such as explicative (e.g., ouch) and onomatopoeic (e.g., tick-tock, bow-wow) words. He points out that although these signifiers resemble or are contingent on the signified, they nonetheless vary between language and go through the same evolution as other signs in it. The noise a rooster makes in English, for example, is “cock-a-doodle-doo” and in Spanish “quiquiriqui.” Both share a

similar rhythm, mimicking a rooster, but differ significantly nonetheless.

In contradistinction to the arbitrary and conventional relation of *signs*, Saussure defined a *symbol* as having a “motivated” relationship and a “rudiment of a natural bond” (p. 68) between signifier and signified. Metaphors are a powerful example of this. The use of different body parts and actions to represent mental states, such as hunger through the stomach, is remarkably consistent across cultures (Shweder 1990). At the same time, because symbols are partially free of conventional constraints, they open up a possibility of playing with existing signifiers in a way that signs do not (as is particularly clear with living, creative metaphors). Thus, in a paradoxical way, we might say that the possibility of different signifiers for signifieds exists more *between* language communities for signs (given their arbitrary relationship) and *within* a language for symbols (as a creative and situated adaptation).

Piaget (1945/1962) picked up Saussure’s notion of symbol in his classic book *La Formation du Symbole chez l’Enfant* (The Formation of the Symbol in the Child), where he traced the origins and development of what he called the “symbolic function.” Its distinguishing feature is the ability to *represent* the world and thereby escape the present. As with his other work, development is explored in terms of the equilibration of the person and the environment through assimilation and accommodation of action schemes and cognitive structures. Early forms of the symbolic function involve imitation (where accommodation is primary) and play (where assimilation is primary). At this stage there is little differentiation between signifier and signified, from the standpoint of a child, and may even lead to a confusion of representation with reality (DeLoache 1991). Genuine differentiation happens with the different forms of representational activity that follow, such as imagination and symbolic play. Because children do not possess all the signifiers of socialized adults, their thought is in general more symbolic (in Saussure’s sense) than adults. Only gradually do the motivated connections between signifiers and signifieds become replaced by the conventional

ones that characterize socialized adult rationality – that is, signs replace symbols.

Children’s symbolic play is typically driven by fascination with objects, which are consciously re-evoked through another object, as when a broom is used to represent a horse or a rock a car (Vygotsky 1990). However, what is being represented can also be more unconscious and affective, relating to children’s desires and anxieties. For example, “a child who has been made jealous by the birth of a younger brother and happens to be playing with two dolls of unequal size, will make the smaller one go away on a journey, while the bigger one stays with its mother” (Piaget 1945/1962, p. 171). Piaget calls these “secondary” or “affective” symbols, which have been the main focus of psychoanalysis. Both forms of symbols are always present but to different degrees. In the next section we will consider in more detail how affective symbols operate in psychoanalytic thought.

Symbols as Displaced Desire

The formation of symbols also takes place normally. A soldier will sacrifice himself for a many-coloured scrap of stuff on a pole, because it has become a symbol of his fatherland, and no one thinks that neurotic. But a hysterical symbol behaves differently. The knight who fights for his lady’s glove knows, in the first place, that the glove owes its importance to the lady; and secondly, he is in no way prevented by his adoration of the glove from thinking of the lady and serving her in other respects. The hysteric, who weeps at A, is quite unaware that he is doing so on account of the association A–B, and B plays no part at all in his psychical life. The symbol has in this case has taken the place of the thing entirely. The pathological process is one of displacement, such as we have come to know in dreams. (Freud 1895, 349–350)

While Freud clearly recognizes the importance of symbols to human behavior in general, his primary interest was to explore how they operate in psychopathology. Rather than a conjunction between signified and signifier found in normal life, he focuses on cases where a psychic disjunction arises in order to protect the ego. In this case, the symbol is an expression of a repressed motive

or trauma to which the person is not consciously aware. The unconscious operates in terms of affects and through a *pars-pro-toto* (a part taken for the whole) logic. An original event may linger on in bodily memory of it, where it becomes symbolized through a particular body part. This may even involve a metaphorical link, as when a patient describes an insulting remark as a “slap in the face” and later develops a facial neuralgia.

In the language of psychoanalysis, the symbol is a “displacement” of an unconscious motive. This serves the psychic function of protecting the person from a painful memory or conflict. According to Freud, such symbol formations express an “over-determination of motive.” This is particularly clear in the case of dreams, where multiple motives may be expressed as a single dream image (Freud 1900), but psychoanalysis applies the principle to a wide range of different psychological phenomena, such as myths, humor, and slips of the tongue. The psychoanalysis is tasked with bringing this unconscious relationship to consciousness through techniques such as free association. In making the unconscious conscious the patient is able to work through the traumatic event.

Freud’s scheme in which an unconscious motive is displaced on the symbolic level is complicated by the notion of “symbolic remove” (Obeyesekere 1990), whereby one symbol can be substituted for another. In the association A-B in the quote above, B is replaced by symbol C and C by D, etc. As this substitution process precedes the link between the original motive and symbol becomes increasingly distant. Whereas Freud focused on *regressive* symbolization as a failure of sublimation, Obeyesekere highlights possibilities for *progressive* symbolization. He argues that for Freud the symbol remains largely on the level of a *symptom* (a displaced motive), where there is a direct relation between motive and symbol, while for him it can be transformed into a genuine *symbol* of spiritual and intellectual enlightenment.

In his classic book *Medusa’s Hair*, Obeyesekere (1981) interviews religious mystics in Sri Lanka that perform rituals, such as hanging

from hooks and walking on hot coals. Rather than considering these as pathological behaviors, he shows how the mystics work through psychic trauma with the help of collectively recognizable symbolic forms, which simultaneously reposition them within as spiritual leaders. Freud’s “dream work” becomes the “work of culture” (Obeyesekere 1990), whereby people appropriate and transform conventional culture for themselves, and the “overdetermination of motive” becomes an “overdetermination of meaning.” He weds psychoanalytic thought to anthropological investigation, in order to explore how culture operates at the levels of both the collective and individual psychic consciousness simultaneously. The analytic focus shifts to the process by which the individual transforms the collective cultural idiom through his or her “deep motivation” and in turn objectifies it as a new cultural object (such as reinventing a ritual). In this way, culture has built into its possibilities for transforming ourselves and the wider society.

Symbols as Representations of the Group

For Freud God is the Father; for Durkheim God is Society. (Evans-Pritchard quoted in Moscovici 1990, p. 37)

In his book *Elementary Forms of Religious Life*, Durkheim (1912/1965) analyzed symbols as being representations of a group, both expressing it and working to unify its members. He gives the example of an Australian tribe that sees itself as a totem animal, in a similar way that citizens will unify under a flag in contemporary nation-states. Durkheim theorized how symbols are creatively generated in collective rituals, where groups are innervated in reciprocal movement. In these moments of “collective effervescence” the group projects its feelings onto objects, transforming them into symbols that can act back on group members, continuing to socially shape their experiences. Such events, and the symbols that arise from them, function to reaffirm the bonds that hold the group together and in so doing give vitality to group members. By contrast the

individual existing alone grows weak and losses spirit.

These processes of inventing new symbols in collective gatherings can be observed in contemporary protests (Awad and Wagoner 2020). Protest movements develop symbols that hold people together and motivate them for a common cause. In this way they serve both to unify and mobilize people, reminding them of the values at stake and the gap between the current state of society and a possible future state. Consider the Arab uprisings which were first sparked in Tunisia, where a street vendor self-immolated when his cart was confiscated by police after failing to pay a bride. His case became a potent symbol of economic deprivation, corruption, and political neglect that resonated with general feelings among the population, and as such quickly became a rally point for nationwide protests. Although revolution was prepared for by an accumulation of grievances, it required that these be condensed into a concrete symbol of injustices against the Tunisian people for it to erupt. Once created, the symbol served as a motivating force and constant reminder of the revolutionary cause.

The protest example already extends the Durkheimian approach beyond a focus on group *consensus* and *stability* to one of *conflict* and *social change*, where symbols emerge precisely to further a group's project against other groups. This shift was powerfully developed by Moscovici's (2000) theory of social representations, which describes how new social objects (esp., scientific concepts) are transformed in the process of being understood and related to by the public. Such objects are signified in search of signifiers. In his original study, exploring how psychoanalysis entered the French public in the 1950s, Moscovici (1976/2008) shows how different groups represent psychoanalysis according to their own history and project for the future. The communist press, for example, sees psychoanalysis as a symbol of American capitalism, while the Catholic press sees its therapeutic benefits (being akin to their own practice of confession). It is important to emphasize that symbols here function not simply to define the current state of affairs but to help the group move toward a possible future that they are

already striving toward. In this way, they are key mechanisms linking the actual and the possible.

Summary

In this entry, we have reviewed three different approaches to how one thing is represented in terms of another through symbols, and the possibilities this opens up for human life. First, we explored how this very ability ("the symbolic function") grows out of the concrete activities of imitation and play in childhood. Possibilities of representation suddenly abound: Anything can potentially be used to represent anything else. The process is only constrained by the limitations of one's imagination. Second, we investigated how unconscious motives can be displaced onto objects, which in turn can be substituted with other symbols. This latter process of creating symbolic remove opens the possibility of progressively transforming what begins as more of a symptom of distress into a symbol of enlightenment. Finally, we touched on how groups project themselves onto objects to create symbols that build bonds between groups members and create an orientation to the future for them. Here symbols highlight the gap between the actual and possible state of society.

Cross-References

- [Social Change](#)
- [Street Art](#)

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Synchronization

Ryszard Praszquier

University of Warsaw, Institute for Social Studies,
Emeritus, Warszawa, Poland

Definition

The phenomenon of synchronization (sync) appears within both inanimate matter and biological systems. The focus of this entry is the occurrence of human synchronization.

The concept of the free energy principle is presented as the core mechanism facilitating the formation of unison patterns. Some of them occur constructively, while others are dysfunctional. This is illustrated on the neuronal, interpersonal, group, and family levels.

Moreover, exemplary methods for “healing” dysfunctional sync are reviewed. In conclusion, it is suggested that further study of human sync could lead to techniques that contribute to higher levels of empathy and cooperation.

Keywords

Coordination · Brain-to-brain coupling · Rhythms · Social sync · Family therapy · Gestalt therapy · Conflict transformation

Introduction

Systems as diverse as clocks, metronomes, singing crickets, cardiac pacemaker cells, firing neurons, menstrual cycles, coupled lasers, fireflies, and applauding audiences exhibit a tendency to operate in synchrony (Pikovsky et al. 2003; Strogatz 2003). This phenomenon is universal and relates to inanimate matter, as well as to biological systems, including brains, individuals, groups, and families. These synchronizations are fascinating, both for scientists, analyzing sync mechanisms (e.g., Albert Einstein, Henri Poincaré, Niels Bohr, Norbert Wiener, and others; see: Strogatz 2003), and lay observers, seeing how elegantly metronomes synchronize,¹ birds form a V-shaped flock,² and audiences clap in rhythm.³

It is likely that the phenomenon that triggered scientists' interest in analyzing synchronal rhythms were fireflies. One of the first articles on these unison-blinking insects appeared in 1917 in the journal *Science* (Laurent 1917). More recently, in the 1990s, public interest was aroused by stories of blinking-in-unison fireflies in the Great Smokey Mountains, USA. In Thailand, a scientist conducted a small experiment that involved capturing several fireflies and releasing them in a dark room. Soon, pairs and trios began to pulse in unison. The synchronized groups grew until all of the fireflies were blinking on and off as one (Strogatz 2003, pp. 12–13).

Strogatz compared fireflies to so-called “oscillators,” and, for decades, the aforementioned mathematicians and physicists tried to understand the mathematics of their coordination.

The focus of this entry is on human sync, i.e., how minds, individuals, and groups synchronize, and the results of this process. Synchronization among humans seems an avenue to “the possible,” as it facilitates the synchronized actions (Fitzpatrick et al. 2016), better communication

¹ See, for example: <https://www.youtube.com/watch?v=W1TMZASCR-I&t=6s>; accessed 30.04.21.

² [https://www.youtube.com/watch?v=9l_uDjL-WAo](https://www.youtube.com/watch?v=9l_uDjL-WAo;); accessed 30.04.21.

³ [https://www.youtube.com/watch?v=GRRtdpiyQMo](https://www.youtube.com/watch?v=GRRtdpiyQMo;); accessed 30.04.21.

and social coherence (De Vignemont and Singer 2006), increased task performance (Barsade 2002), and better cooperation (Wiltermuth and Heath 2009).

Synchronization may lead to positive or negative results, and may appear on various levels, e.g., the neural, family, and social levels. In negative cases, there are some helpful concepts for “healing” maladaptive sync patterns, e.g., specific therapeutic processes and conflict transformation projects.

Synchronization: A Prevailing Phenomenon

Synchronization is the coordination of events to operate a system in unison; it is a

pervasive concept relevant to diverse domains in physics, biology, and the social sciences (Ramseyer and Tschacher 2006). Sync can be considered if the properties of two subsystems (parts of a larger interacting system) agree in time (Brown and Kocarev 2000).

Free Energy Principle

The free energy principle describes how systems (e.g., biological or neurological) maintain stabilization through self-limitation of the number of states (Ashby 1962). Systems minimize the amount of states and the level of energy through modifying their own configuration (Friston et al. 2006).

Sync is a natural state in which self-organizing systems strive for a state of minimum energy, according to the free energy principle (Ashby 1962; Friston et al. 2006; Friston 2010). An emergent property of this process is synchronization.

A good illustration of this is at the brain level, as the brain minimizes free energy, striving for a stable state (Koban et al. 2019). It is synchronization that enables the functioning of the free energy principle, as sync is the lowest-energy state (Leclère et al. 2014). Some authors have posited that synchrony is an emergent property of free energy minimization; therefore, synchronization is a state of a “resting brain” (Palacios et al. 2019).

Constructive Sync

Neurons and Their Functional Units

New challenges trigger the appearance of new neuronal functional units in the brain, i.e., coherent neuronal structures that function to accomplish tasks (Nowak et al. 2020). The sync provided by the formation of functional units may be transient, persisting only as long as necessary to perform the task at hand (Nowak et al. 2017).

These new neuronal functional units are often organized around solving new problems, generating creative solutions, or around empathetic “feeling into” newly encountered others (Praszkier 2014); as such, they play a constructive role.

Brain-to-Brain Coupling

When individuals synchronize, it has an impact on their brains, as they correlate with the emergence of an interbrain synchronizing network (Dumas et al. 2010).⁴ For example, a study documented that synchrony of both fingertip movement and neural activity between two participants increased after cooperative interaction (Yun et al. 2012).

Brain-to-brain coupling looks like a wireless communication system in which two brains are coupled via the transmission of a physical signal (e.g., sound propagation) through the shared physical environment (Hasson et al. 2012). This was confirmed by various scanning methods. MRI testing documented that during successful communication, the speaker’s and listener’s brains exhibit joint, temporally coupled response patterns that synchronized over time (Hasson et al. 2012). Moreover, EEG scans of pairs of subjects imitating one another revealed that states of interactional synchrony correlate with the emergence of an interbrain synchronizing network (Dumas et al. 2010).

These findings were confirmed using fMRI to record brain activity of both speakers and

⁴In the brain regions that play a pivotal role in social interaction, i.e., alpha-mu band between the right centroparietal area.

listeners during natural verbal communication. During successful communication, speakers' and listeners' brains exhibit joint, temporally coupled response patterns. Additionally, more extensive speaker–listener neural couplings result in more successful communication (Stephens et al. 2010).

Child Development

Synchronization supports many human activities. It is instrumental for a child's successful development: Sync is seen as a formative experience for the maturation of the social brain, impacting the development of self-regulation, symbol use, and empathy across childhood and adolescence (Feldman 2007).

The ability to achieve synchrony may represent a crucial developmental achievement for significant dyadic relationships—ones that facilitates social, emotional, and cognitive growth for the child (Harrist and Waugh 2002). Moreover, family harmony and adult–child synchrony are critical for an adolescent's successful social adaptation (Barber et al. 2001).

Groups

In groups, synchronization increases the tendency to cooperate and to maintain positive relationships (Tschacher et al. 2014; Wiltermuth and Heath 2009). It also decreases the occurrence of conflicts and increases the efficiency of task groups (Barsade 2002).

Group members tend to like and have more compassion for those with whom they are synchronized (Hove and Risen 2009; Valdesolo and DeSteno 2011), and are more eager to cooperate with them (Lang et al. 2017; Wiltermuth and Heath 2009). Generally, people tend to be more prosocial after synchronizing behaviors with others (Hu et al. 2017).

Destructive Sync

In the Brain

The synchronization of neuronal activity in the brain may be a determinant of several mental disorders, such as obsessive–compulsive disorder

or epilepsy (Özçoban et al. 2014; Tass et al. 2003). New theories of the formation of epileptic networks in the brain indicate synchronization of particular regions of these networks (Geier and Lehnertz 2017).

Interpersonal Relationships

In the psychology of intergroup aggression, there is a known phenomenon of synchronizing the mimicry and gesticulation activities of the participants of aggressive mobs (Goldstein 2002; Hatfield et al. 1994).

Family Dynamics

On the family level, there are known sequences of repetitive behavioral patterns, which contribute to destructive outcomes (Nowak et al. 2020). In some cases, the tension sensed in the behavior of one spouse may trigger aggressive behavior in the other spouse and odd reactions from one child, while another child may tend to withdraw; after a final outburst of emotions, the family dynamics calm down, and recurrently reappear after a period of time.

Similarly, regular reoccurring patterns may be perceived as destructive, on the one hand, and as paradoxically uniting the family around the appearing symptoms, on the other hand (Fiese et al. 1993; Minuchin 1974; Palazzoli et al. 1977, 1978; Wolin and Bennett 1984).

Dysfunctional into Functional Sync

Psychotherapy

Psychotherapy is a collaborative treatment based on the relationship between an individual and a psychologist, grounded in dialogue that allows the individual to talk openly with someone who is objective, neutral, and nonjudgmental. The aim is to work together to identify and change the thought and behavior patterns (i.e., sync sequences) that keep the patient from feeling good (Hamlyn 2007; Wampold 2019).

Sync and Therapeutic Relationships

The studies related to synchronization in psychotherapy are mostly focused on the positive impact

of synchronization of the psychotherapist–patient relationship and the way it influences the outcomes of psychotherapy (Koole and Tschacher 2016; Ramseyer and Tschacher 2008, 2011; Tschacher et al. 1998).

Sync between the therapist and the patient manifests both on the interpersonal level, as well as on the speech and movement feature level (Schiepek 2009), i.e., the way verbal and nonverbal fixed sequences arise (Tschacher et al. 1998).

Kinesthetic coordination (Dittmann 1987) is usually detected by motion energy analysis (MEA),⁵ revealing, for example (on the $N^o = 70$ patients sample), that head movements correlate with the overall results of the therapeutic process, while the sync of body movements correlates with the result of a particular session (Ramseyer and Tschacher 2014). This is probably because body movements are more automatic and do not involve conscious analysis, whereas head movements may reflect considerations related to the entire process (Dittmann 1987).

Generally, the level of synchrony of the interactions of interlocutors may contribute to the outcomes of their conversation (noted by neurolinguistic programming [NLP], a therapeutic method) (Dilts et al. 1980).

Family Systems Therapy

Over time, families develop habits and rituals involving both patterns of behavior and emotional reactions. When occurring regularly, these rituals become synchronized, many of them being positive (according to Carl Jung's theory of the reassuring role of rituals), bringing stability and messages of love and care.

However, in some cases, sync stabilizes over dysfunctional issues, e.g., around avoiding some threatening problems. This process may lead to increasing problems and impairments.

The family systems therapy approach perceives family rituals as essential (Fiese et al. 1993; Palazzoli et al. 1977, 1978; Wolin and Bennett 1984). Along these lines, the concept of family

systems therapy (FST) was developed, based on the general system theory of the 1960s (Bertalanffy 2015)⁶ and Murray Bowen's systemic insights (1976; 1978), perceiving the family as a whole, autonomous system (Keeney 1983; Nichols 1984). Specific techniques were developed to remove dysfunctional sync, eventually replacing it with a functional one, without shattering the fragile family balance (Nowak et al. 2020).

Gestalt Therapy

Kurt Lewin's conception of the field theory (Lewin 2004), grounded in Gestalt psychology (Burnes and Cooke 2012), was based on the premise of seeing the situation as a whole (Lewin 2004); in other words, perceiving dynamic systems instead of single elements.

This is a synchronous process: Usually, new “wholes” (gestalts) emerge after playing their roles, are removed, so that space is created for new gestalts. However, in some cases, the existing gestalt is not fulfilled or gratified, and as such—while other needs are more pressing—it is moved into the background. If unsatisfied, it lingers and “retroreflects” (i.e., turns back) in the background, popping up through some unintended movements (e.g., tapping a finger) or actions (e.g., emotions transferred to someone else). This kind of a dysfunctional gestalt shatters synchrony, often unknowingly.

Gestalt therapy (grounded in the concept of *phenomenological experience*) (Crocker 1999; Latner 2000; Melnick and Nevis 2005; Yontef 1993) was created by Frederick Salomon Perls (1992a, b). Its core idea was based on shifting the awareness from interpretations and attributions to experiencing the “here and now,” and in this way, deconstructing old dysfunctional gestalts and recomposing them on a new functional level. By doing so, a new adaptive synchrony is created and constructive sync is maintained.

⁵See, for example: <https://www.youtube.com/watch?v=sHBxBC01pd8>; accessed 03.05.2021.

⁶Developed in the 1950s and 1960s, mostly in Palo Alto, by Gregory Bateson, Jay Haley, Donald D. Jackson, and Paul Watzlawick; later, in the 1970s, also by Salvador Minuchin, Virginia Satir, and the Milan School (Mara Selvini Palazzoli).

Social Change: Conflict Transformation

Intractable conflicts lead to developing a specific sociopsychological infrastructure, which includes collective memory, an ethos of conflict, collective emotional orientations, and societal beliefs (Bar-Tal 2009). Periods of conflict often alternate with truce, forming a specific rhythm.

People get used to conflict environments and feel insecure when peace comes about (Praszkier et al. 2010). In this vein, it seems essential to transform the sociopsychological context so that it becomes a peace-enforcing environment (Lederach 2003; Miall 2004).⁷

For example, Dr. Yehudah Paz, from Israel, is currently building islands of peace in the Middle East region.⁸ He is convinced that mere conflict resolution is not enough, given that peace leaves a void, which is very often difficult for people used to war to bear, especially if they see no other prospects. Based on this philosophy, he involves women from clashing groups in profitable joint ventures. Through cooperating in these ventures, Israeli and Arab women experience benefits engendered by joining forces and generating profit.

Along these lines, peace becomes a wanted state, as it provides profit and new prospects; it also alters the old conflict narratives, replacing them with stories of success and profit through cooperation and trust (Praszkier et al. 2010).

This illustrates the process of conflict transformation, replacing the “old” conflict-based sync with synchronization around positive factors.

Summary and Conclusions

There is a tendency in nature to synchronize, relating both to inanimate matter and to biological systems. In many cases, this is an adaptive and constructive process, helping birds to form efficient V-shaped flocks or individuals to increase

their level of empathy. One explanation of this synchrony is the free energy principle, enabling systems to achieve the most efficient energy balance.

The effect of the synchronization of systems or subsystems may be positive, e.g., the appearance of neurons forming functional units, better understanding between individuals, or better cooperation in groups. There are also situations when synchronization is maladaptive, e.g., epileptic brain circuits, intergroup aggression, or family dysfunctional patterns.

Fortunately, there are several paths for “healing” dysfunctional sync, e.g., psychotherapy or social entrepreneurship aimed at conflict transformation.

From what has been discussed so far, it seems justified to conject that synchronization augments “the possible” (see: Glăveanu 2018). One of the most interesting examples of this positive influence is synchronization through dancing. The studies thus far indicate that dancing augments empathy (Bergland 2013; Hagendoorn 2004; Powers 2010). Dance involves tuning into another’s movements, intentions, and emotions (Christensen et al. 2016). Couples that dance, especially aging couples, are healthier and live longer; moreover, dancing reduces the risk of dementia (Powers 2010) and helps alleviate the symptoms of Parkinson’s disease (Park et al. 2020). Therefore, it may be advantageous to continue exploring how common rhythm and synchronous behaviors contribute to people’s well-being.

Finally, the influence of synchrony on a group’s effectiveness may be worth further research. As mentioned before, it has been documented that synchrony with others can increase cooperation by strengthening social attachment among group members (Wiltermuth and Heath 2009). It may be worth exploring how common sync-building rituals, e.g., group dancing,⁹ build better understanding and cooperation.

⁷This is the reason why this approach would support the notion of “conflict transformation” rather than the more technical and narrowly defined “conflict resolution” (Lederach 1996).

⁸See: <https://www.ashoka.org/en-us/fellow/yehudah-paz/>; accessed 6 May 2021.

⁹See, for example, ritual dancing before sessions of the international students’ association AIESEC, operating since 1948 in 126 countries, at: <https://www.aiesec.in/dancing-way-world-peace/>. Accessed May 17, 2021.

Cross-References

- Creativity
- Narrative Therapy
- Psychopathology

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Talent Development

Jonathan A. Plucker¹ and Kristen G. Fickes²

¹Center for Talented Youth and School of Education, Johns Hopkins University, Baltimore, MD, USA

²Emory H. Markle Middle School, South Western School District, Hanover, PA, USA

Abstract

Talent development is an approach to education for advanced achievement. Traditionally, many models of advanced education focus on the identification of young people who are already performing at high levels, interpreting that performance as evidence that the student needs additional advanced services. In contrast, talent development focuses on providing opportunity to young people who may have the potential to perform at those advanced levels. This talent development approach, with its focus on potential rather than performance, tends to incorporate inclusive, developmental, and sociocultural perspectives that emphasize striving toward the possible over living with current realities.

Keywords

Talent development · Domain specific · Development · Psychosocial factors

A longstanding problem with advanced education programs is that they appear to serve some groups of students well while ignoring other groups entirely. Consider the case of a school district in the mid-Atlantic region of the USA. The district enrolls nearly 5500 students, but all of the students identified as gifted and talented come from two of the district's seven schools. This is not uncommon, with most school districts (New York City Schools being the most obvious example) experiencing similar patterns. This patchwork of academic talent has less to do with the capabilities in any one school and more to do with the fact that American students still primarily attend their neighborhood schools. With well-entrenched residential segregation in housing, demographics are often highly dissimilar across a school district's buildings (Plucker and Peters 2018). The movement away from traditional gifted education models toward talent development (TD) models is specifically aimed at providing young people the opportunity to explore what is possible of themselves, as what is possible of their futures.

An exploration of Subotnik et al.'s (2017a) model, as well as discussion of key conclusions and future recommendations for this approach to talent development, will allow the reader to understand why this framework is beginning to emerge as a model for what is possible in gifted programming. In November of 2015, the National

Association for Gifted Children (NAGC) finalized a three-part report on talent development. The NAGC board of directors believed further research on talent development was warranted as giftedness is now thought to be “multi-faceted, domain-specific, developmental, observable through achievement, influenced by a variety of psychosocial factors, and vulnerable to loss if neglected” (National Association for Gifted Children 2015, p. 5). A sociocultural approach, the talent development framework steps away from the entity views of intelligence (i.e., focusing interventions on students who are already performing at high levels), instead aiming to transform one’s potential into high achievement (see also Plucker and Barab 2005; Plucker et al. 2017). Rather than focusing on what already is recognized and realized about student talent, the talent development framework reshapes gifted education by shifting toward what is possible. Additionally, this reshaping could redirect the focus of teacher training and gifted programming. Instead of emphasizing identification, teacher training and gifted programming could center on an approach to cultivate the talents of potentially high-achieving students. Moreover, legislative and corporate support for gifted programming could increase as the talent development approach aims to “prepare talented individuals for outstanding creative productivity or high levels of contribution to a domain and to our world” (National Association for Gifted Children 2015, p. 6).

A talent development framework for gifted education revolves around basic principles that support the modern view of giftedness. To begin, in a talent development framework, domain-specific abilities and general intellectual abilities are equally valued. These abilities “are malleable and need to be cultivated” (National Association for Gifted Children 2015, p. 5). Fostering a child’s academic and social-emotional development requires parental guidance and knowledge of educational opportunities. Beginning with potential, a talent development framework views giftedness in different stages. From potential, “Giftedness transforms from competence to expertise to distinction in achievement or creative productivity”

(National Association for Gifted Children 2015, p. 5). In its early stages, a talent development framework identifies individuals with potential, whereas in its later stages, the framework emphasizes the achievement and productivity of individuals. Emphasizing potential when identifying students for gifted programming grants previously underrepresented populations access to services. Furthermore, the trajectories of different domains are not parallel. Each domain has different beginnings, peaks, and endpoints. In most domains, potential is observable during early childhood. However, certain domains require the acquisition of basic skills or physical maturation before talent is noticeable. Therefore, both parents and educators should continue to identify individuals whose potential may become apparent at a later point in time, reinforcing that an individual’s possible selves may develop throughout one’s lifetime and are not set in stone at an early age (Zittoun & de Saint-Laurent 2015).

Since giftedness is malleable, a comparison group of individuals with similar educational experience or background characteristics should be used for eligibility of services within a domain. Students who are eligible for gifted services yet are not achieving in the classroom should receive school counseling and psychological services to counteract any factors thwarting achievement. A comprehensive evaluation may be necessary to understand possible causes of and solutions for the underperformance.

Throughout the stages of talent development, children should be exposed to a variety of programs, teachers, and instruction. The rate at which an individual progresses through the stages of talent development will vary. For example, students who are economically disadvantaged may have less exposure than other individuals, causing a delay in their development. Conversely, talent development can be accelerated in individuals by the exposure to enrichment opportunities, as well as the assistance of an effective support system.

Striving for greatness, gifted children must be persistent, practice strategic risk-taking, and have self-confidence in order to develop their talent (Subotnik et al. 2017a, p. 254). Although these

characteristics may not occur naturally in certain individuals, coaching and instruction can ameliorate these psychosocial variables. The opportunities to cultivate one's abilities must go beyond the home and school. To fully develop one's potential, an individual must explore and engage with opportunities at local, regional, and national levels. These experiences should include authentic interactions with professionals within a particular field. By interacting with role models and mentors, children receive exposure to new ideas and concepts, allowing them to see what is possible for themselves.

To foster the abilities of talented individuals, gifted programming should include short-term and long-term goal setting for students. Each pathway in a gifted program should allow for participants to access high-level opportunities within a particular domain. For participants with families who lack knowledge about these opportunities in certain fields, gifted programs should provide students the means to access these opportunities.

Subotnik et al.'s Megamodel

The most significant conceptual advance in talent development occurred with the creation of Subotnik et al.'s (2011, 2017a) megamodel for talent development. The model's systematic approach focuses on domain-specific ability rather than global ability, contending that the sole factor for adulthood eminence is not a high general cognitive ability as measured by IQ or similar tests. This emphasis on high general cognitive ability, which is prevalent in gifted education models, systematically limits the possible by excluding various types of talent and types of potential recognized in young people. Rather, Subotnik et al. (2017a) point out accomplishments in adulthood are actually linked to domain-specific abilities, noting their importance in certain athletic, performing arts, and other professional fields. For example, spatial reasoning is important to success in several STEM and artistic fields, and technical skills distinguish elite from less proficient athletes (Elferink-Gemser et al. 2007; Lubinski, 2016; Stieff, 2013). Beyond

domain-specific ability, Subotnik et al. (2017a) believe deliberate practice and study are the other factors necessary for talent development.

To apply the model, one needs to first understand the two types of individuals who pursue creative fields and careers. The performer "uses his or her body, voice or expression to interpret a piece of music, written word, or physical challenge," and the producer "choreographs, composes, invents, or researches a problem" (Subotnik et al. 2017a, p. 256). To succeed within a domain, both performers and producers must obtain the necessary skills and content knowledge. Through deliberate practice and study, these individuals then foster their abilities. With the necessary commitment and motivation, certain individuals can propel further ahead; whereas, a lack of these characteristics – and, perhaps more to the point, a lack of opportunities to develop commitment and motivation – can limit success. With the assistance of mentors, both performers and producers are able to gain an understanding of the domain's values.

Notable differences exist between the two groups. For example, through the practice of specific skills, a performer is more readily able to view their results. Meeting explicit benchmarks allows a performer to note their progress and growth. Furthermore, a performer might only be able to operate at peak performance for a limited period of time. Additionally, the input of experts within a field is greatly valued by this group. Performers are also explicitly instructed on psychosocial skills throughout their training. Lastly, culturally, performance domains are of greater value than production domains, specifically those of which are academic. Therefore, during adolescence, certain aspects of the performance domain can offer insight into the talent development of academic domains (Subotnik et al. 2017a).

The conceptual benefit of the producer category is considerable, given that it broadens our perspective on who can be considered talented in the present and who may be considered talented in the future. In this way, the idea of talent development of producers directly links to Glăveanu's (2018) description of possible selves. The more

opportunities we have to view a broadened range of children as being potentially talented, the greater the chance that they will understand the range of possible selves – and likely possible futures – available to them.

Identification in Music

Consider, for instance, how potential is transformed to achievement within the field of music. To begin, the identification of high potential occurs at a young age in a manner that is “content valid” (Subotnik et al. 2017a, p. 258). While the child is performing (i.e., singing or playing an instrument), both pitch and general musicality are observed. As the students crossover into the achievement stage, the pieces they are asked to perform during auditions are made public. Knowledge of this information is advantageous to the individuals who are able to access it. Despite having high potential, certain individuals without access to this knowledge or other resources, such as instruments or teachers, are at a distinct disadvantage.

Furthermore, benchmarks for success in music are held each year by a performance that takes place in front of the members of their musical area (i.e., chorus). Continuing on within the program means one must succeed within this venue. Additionally, students are given individualized lessons that focus on their own strengths and areas for improvement. Instructors also work to curb any anxieties their students might face when performing. Whether a student wants to become a music teacher or a concertmaster, a well-developed music program will develop a personalized pathway for its students (Subotnik et al. 2017a). The personalized pathway then allows for the student to explore possible selves within the domain of music. Having access to opportunities like this is paramount when cultivating the talent of individuals – regardless of the field.

Identification in Mathematics

Mathematics is an academic domain where an individual is able to demonstrate high potential

at a young age, with over 15% of American students performing at least three grade levels ahead of their chronological age through middle school (Peters et al. 2017). A child who attempts to “mathematize” the world at a young age will identify patterns and count various objects. For instance, when given a few skittles from a parent, a child with the capacity for exceptional mathematical reasoning may group the candy by color. The child might even attempt to ensure that each color group contains the same exact number of skittles. If the child has a sibling, it might count and compare the number of skittles he/she has to the number of skittles his/her brother has. One parent observed her son “mathematizing” the world during lunchtime; she noticed him grouping his fish sticks into math problems as he ate them.

With parental support, these children begin their formal education with advanced mathematical computational and reasoning skills. Oftentimes, these individuals are then those selected for early acceleration in mathematics. Children from socioeconomically disadvantaged homes may not have access to the same early opportunities as their peers. Therefore, schools must ensure that their pre-schools and elementary schools supply students with enrichment opportunities that explore mathematical concepts. These opportunities allow educators to look for those children who not only “mathematize” the world but also express exceptional interest and demonstrate rapid skill acquisition in mathematics.

To measure one’s academic development in mathematics, achievement tests are used. The results of these assessments determine the necessary services to be provided to the student. An example of these services includes subject area acceleration. The pacing of instruction can also be increased to match the rate of students’ acquisition of skills. In elementary school, to ensure that those who might develop later in the field are identified, and after-school and in-school enrichment should be offered. For example, an intermediate school in South Central Pennsylvania offers a 43-minute enrichment period to its students. One of the options available to students is Barbie Bungee, a math enrichment where students have to design a bungee cord for Barbie, using math to

conduct an experiment, as well as to make and to test predictions. Opportunities for enrichment such as this give students the exposure to mathematics that is necessary to pique one's interest and motivation.

When a student gets to middle school, above-grade-level testing should be used as the testing has "immediate utility" and "predictive validity" (Subotnik et al. 2017a, p. 259). Tests such as the Preliminary Scholastic Assessment Test (PSAT), the American College Test (ACT), or the Scholastic Assessment Test (SAT) have high ceilings, allowing for better estimates of a talented student's mathematical reasoning ability, which in turn provide better information about the most appropriate option for placement. While completing Algebra I in eighth grade may serve as sufficient acceleration for one student, another student may require further acceleration.

Beyond in-school and after-school enrichment, schools offering a talent development program could ensure that students have access to math competitions, as well as after-school math clubs. For instance, competitions such as MATHCOUNTS, Math Olympiads, and 24 Challenge afford middle school and high school students the chance to compete against their peers in a variety of events.

To further develop talent, mathematically talented students should be advised by school counselors and mentored by professional mathematicians. Although schools may not offer all of the necessary advanced math classes a student needs, school counselors should be able to identify online or dual enrollment courses that would develop the student's mathematical talent. Ensuring that students from low-income families have access to opportunities outside of school is the work of the school counselors, as well as the organizations themselves – that guidance is pivotal to open up new possibilities for students furthest from opportunity. Another task of school counselors is to locate adult professionals to mentor their mathematically talented individuals. Allowing students the chance to network and to engage with these adult professionals helps the student to understand the demands of the field. For students who do not receive guidance from their own families, this

interaction and resulting advice is a salient aspect of the mentorship. In addition to guidance, mentors can also supply students with information about internships and trainings (Subotnik et al. 2017a).

Identification in English Language Arts

In English Language Arts (ELA), talent is manifested early in "word play, verbal analogies, word games, or early reading" (Subotnik et al. 2017a, p. 261). While on a road trip, young children who demonstrate high potential in ELA might point out letters and words that rhyme. One student, a third grader, as well as a fan of analogies and alliteration, once told his mother about his sister, "Isabella is cuter than a coyote's cousin!" As with math talent, knowing how to observe for these patterns in behavior and thinking of young people can help adults expand their ideas about what is possible for each child they nurture and support.

As the talent continues to develop, individuals "may proceed to a passion for writing short stories, plays, or poetry, or creating books, newspapers, or magazines" (Subotnik et al. 2017a, p. 262). The same third grader mentioned above is well known for his improvised poems. On one occasion, when his mother's friend was not feeling well, he asked his mother to record him performing this poem for her friend.

"Sometimes you think the stomach bug will never come again,

But then it comes back.

You should lock it in a pen.

So here's how to get rid of the stomach bug.

Make sure you only take the doctor's specifically prescribed drug.

(In a whisper) Or medicine.

Secondly, get lots of rest.

Third, eat healthy food.

Fourth, please get our video, it will put you in a good mood.

So next time the stomach bug strikes, you know what to do.

And remember, lots more sicknesses can happen just to you!"

When identifying potential and providing instruction in ELA, it is important for educators to

broaden their construct of literacy to include other culturally rooted forms, such as storytelling from indigenous roots and hip hop from African American roots. This expanded view increases equity and extends young people's concept of valuable forms of written and verbal expression to include their communities and identities. The recognition and celebration of these other forms of literary prowess will show students what is possible for themselves and their futures.

In elementary school and middle school, the instruction of ELA programs should be to cultivate a strong foundation in written expression. A program like Kid Writing take a systematic approach to writing workshop for elementary school students. To further enhance writing talent, students will need to engage in writing in a variety of modes. Though schools often value modes of writing like informative and persuasive, it is vital that students confer and receive feedback on their creative writing as well. Employing a reading and writing workshop model, such as that suggested by Atwell's (2014) *In the Middle* or Gallagher and Kittle's (2018) *180 Days: Two Teachers and the Quest to Engage and Empower Adolescents*, cultivates talent through its personalized and student-centered approach.

In middle school and high school, courses should focus on literary analysis. Students should be exposed to a variety of mentor texts, studying the craft moves of the authors and replicating their techniques. Integrating the techniques of experts into their writing, students evolve their own craft, so they can then participate in competitions. These competitions provide students a benchmark for their development, an opportunity for feedback from professional writers, and a chance to connect with other aspiring writers. Moreover, enrichment opportunities in ELA should be available to students. Examples of these extracurricular activities include speech or debate club, drama club, and creative writer's club. Working to develop the school's newspaper or literary magazine is another way to expand what is possible with one's talent.

Just like students are advised in other domains, counselors and educators should help

talented writers identify organizations where a student's work can be published. It is vital that educators be connected to professional networks within their field, so students have the opportunity to connect with mentors or professional writers. For example, the National Council of Teachers of English publishes information about summer institutes, online events, and networking opportunities, where educators can learn how to better support their talented students. As a student's talent advances, if rigorous courses are not available within the school, counselors should propose alternative options to students, such as dual enrollment or distance learning (Subotnik et al. 2017a).

Key Conclusions and Recommendations for the Future

Concerns

The talent development approach to advanced education and child development is relatively new, and as such, its potential value needs to be weighed against significant concerns that have emerged. For example, there is a sense that the talent development framework deemphasizes domain-general talent, at least as traditionally represented by psychometric constructs, such as general intelligence (Plucker and Shelton 2015). Therefore, does a focus on domain specificity of talent versus domain generality mean that every child is talented in something?

If so, this raises questions about feasibility with such a large-scale approach to talent development. But those concerns should be counterbalanced by the advantages provided by broader conceptions of relevant domains and cultural perspectives that likely lead to children and adolescents being able to view themselves across a wider range of possible selves, possible worlds, and possible futures (Glăveanu 2018). From this perspective, perhaps the increasingly common, equity-focused question within the field of education "Who gets to be talented?" should be asked differently: Who gets the opportunities to view and develop their possible selves?

Another concern is that, given the sociocultural approach to talent, high levels of skill do not reside within the individual but rather in the interaction between the student, peers, and the social context; the practical implications of this perspective are that talking about “profoundly gifted students” does not make much sense as talent is something that emerges from interactions and does not exist within someone. This lens on talent makes it highly appropriate when the concern is about closing excellence gaps that have formed as the result of students not receiving high quality, rigorous education and support, but it may be a threatening approach to advocates, educators, and parents of students who are already performing at high levels and receive special services as a result of being labeled “a gifted child.”

In a related vein, the emergent, sociocultural nature of talent within TD frameworks further challenges the “special child” approach to advanced education due to its allowance for talent to emerge at various times – implying that talent may surface at unexpected or unanticipated times. A contextual approach to advanced learning is hardly new (see the classic models of Renzulli and Reis 2018), but it is a foundational concept in most TD models and expands what we imagine is possible for talent development for people across the lifespan.

Additionally, the focus on eminence in the Subotnik et al. model has been questioned. The authors have responded to these concerns on multiple occasions (e.g., Worrell et al. 2012; Worrell et al. 2018) by noting that eminence, defined broadly, is part of several gifted and advanced education models, and that their emphasis on eminence as the ultimate goal of TD programs has been mischaracterized.

Finally, TD models have not been subjected to rigorous research on their implementation and efficacy. This lack of empirical support is not surprising given that this approach to advanced education remains relatively new, but a number of articles have appeared recently proposing innovative strategies for implementing TD models (e.g., Subotnik et al. 2017a, b, c), and Project EXCITE, a Chicago-based program using talent

development principles, has been carefully evaluated and studied (Lee et al. 2009; Olszewski-Kubilius et al. 2017). However, these efforts have largely been conducted by the originators and popularizers of the TD approach, and having third-party evaluations would provide an additional degree of confidence in this research (see Preckel et al. 2020).

Promise for the Future

Regardless of these concerns, the talent development approach to advanced education holds significant potential for impacting children’s possible lives in positive ways. First, the available models emphasize the distinction between high performance and high potential, noting that a lack of high performance does not necessarily lead to a lack of potential. Second, the approach may lead to effective strategies for helping low-income and racial/ethnic minority students develop their talent potential into important achievements. Third, the emphasis on domain-specific talent development, in which a student’s aptitudes, interest, and motivation within a single domain are valued of and by themselves, without regard to the student’s attributes in other domains, changes the emphasis from a search for all-around high performers to identification of advanced achievement in specific areas, further broadening what is possible in how to identify who is and can be considered talented. Work remains to be done before the talent development mindset can be considered an effective, viable model for advanced education, but initial conceptual intervention and empirical work provide a promising path through which young people can view their possible selves and the possible futures to which they can create and contribute.

Cross-References

- ▶ [Creativity](#)
- ▶ [Design Thinking](#)
- ▶ [Giftedness](#)
- ▶ [Innovation](#)
- ▶ [Possible in Education](#)

- Possible in Human Development
- Zone of Proximal Development

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Theory of Mind

Laura Franchin

Department of Psychology and Cognitive Sciences, University of Trento, Trento, Italy

Abstract

The theory of mind (ToM) refers to how people understand their own thoughts and feelings and those of other beings. It is a crucial cognitive mechanism for social interactions and communication. It helps us to predict, to explain, and to manipulate behaviors or mental states. Moreover, this skill is shared by almost all human beings beyond early childhood.

The literature presents different explicit false-belief tasks as a means of investigating ToM in children (e.g., one of the most famous is known as the Sally-Anne task). Although children younger than 4 years usually fail in these explicit tasks, it cannot be excluded that some less complex forms of understanding mental states develop earlier. So, in order to investigate the precursors that anticipate the emergence of a more mature representational system, many recent studies on infants' beliefs have demonstrated, in the last decade, a very early sensitivity specifically to the false beliefs of others by using implicit looking-time tasks. This entry starts with the definition of the theory of mind and its history, before moving on to summarize developmental research in this area. Finally, it focuses on the relation between theory of mind and the *possible* with some reflections on how an increasing consciousness of the variety of situations that the possible presents to us could allow people to choose the best alternative for themselves and others.

Keywords

Theory of mind · ToM · Mind reading · Mentalizing · Folk psychology · Possible

Definition and History

The theory of mind (also known by the acronym ToM) refers to how people understand their thoughts and feelings and those of other beings. This ability is also known as “mind reading,” “mentalizing,” or “folk psychology.” It is one of the most important cognitive mechanisms underpinning social interaction and communication. It helps people to predict, to explain, and to manipulate behavior or mental states. ToM implies deriving what the others think from signs, such as facial expressions, body movements, and utterances. This skill is shared by almost all human beings beyond early childhood.

Nevertheless, these mental representations are not always correct; they might turn out to be wrong which would be referred to as “false beliefs.” This could happen for several reasons, such as an event having occurred without our knowledge. Thus, we can recognize that our belief was false, subsequently acquiring new information or updating our belief. This meta-representational ability allows us to realize that our beliefs can vary on the basis of the knowledge we have available (e.g., Mitchell and Laco  e 1991; Wellman 2017).

Although the philosophers have been discussing mind reading for centuries, it is only in the last 40 years that scientific research has focused on the intensive study of this topic. The term “theory of mind” appeared in scientific literature in 1978 when Premack and Woodruff published “Does the chimpanzee have a theory of mind?”. The authors defined ToM as the individual attribution of “mental states to himself and others (either to conspecifics or to other species as well)” (p. 515). In the same year, also Fodor (1978) published a philosophical paper on “Propositional attitudes” where he wrote about the “representational theory of mind.” The author considered the mind as “an organ whose function is the manipulation of representations and these, in turn, provide the domain of mental processes and the (immediate) objects of mental states” (p. 521). These three authors used the term “theory of mind” referring to a system of inferences, not directly observable states, which is used to make

predictions about the behavior of other beings. Soon the term appeared in developmental psychology (see Bretherton et al. 1981) where it became a common label in its field with the publication of the book *Developing Theories of Mind* in 1988, edited by Astington, Harris, and Olson. This book presented a special collection of empirical reports and conceptual analyses discussed in two important conferences which occurred 2 years before (i.e., in May 1986, International Conference on Developing Theories of Mind, University of Toronto, Toronto, and in June 1986, Workshop on Children's Early Concept of Mind, St. John's College, Oxford). Over the years this term has been used in a wide variety of ways that today is impossible to condense into a precise definition. Doherty (2009), for example, defined ToM as an "umbrella term" for children's understanding of mental states that are belief and desire.

After a definition of the theory of mind and its historical context, this entry will continue with a brief review of empirical research on the development of the theory of mind. Finally, it will consider the relation between ToM and the possible.

Research on ToM

"Do children have a theory of mind?"

A central issue in developmental psychology has been to understand how children begin to realize that they and others have mental states, which can sometimes be true – corresponding with reality – but may also be false. In addition, how and when children realize that these states of mind drive their actions and those of others (e.g., Baron-Cohen 1991; Lewis and Mitchell 1994; Moore 1996) are also fundamental. Investigating how a ToM develops could offer important insights into the study of social cognition. Several pieces of research have shown that by the end of their preschool years, at around 3–4 years, children have these skills and begin to understand that individuals might have false beliefs about reality (e.g., Astington et al. 1988; Frye and Moore 1991; Wellman et al. 2001; Whiten 1991). Furthermore, these skills are

universal because they are present in various cultures all around the world (Callaghan et al. 2005), and it seems that they are uniquely human because different adaptations of false-belief tasks have documented consistent failure in chimpanzees and other great apes (Call and Tomasello 2008).

One of the first and most famous false-belief tests for investigating ToM in children was used by Wimmer and Perner (1983). The authors made up different stories, acted out with dolls and props, such as the following: Maxi is a child who puts some chocolate into cupboard x. In his absence, his mother moves the chocolate from cupboard x into another cupboard y. Participants have to point to the cupboard where Maxi will look for the chocolate when he returns. Only when children are able to represent Maxi's wrong belief, which is "chocolate is in cupboard x," despite knowing that the chocolate is in cupboard y, will they be able to correctly indicate cupboard x. Wimmer and Perner (1983) found a strong age-based trend: the children began to pass the task at around 4–5 years (at this age level, however the majority of children pointed wrongly to the actual location y, while almost all 6–9-year-old children correctly indicated location x).

From the end of the 1970s to the end of the 1980s last century, we witnessed an increase in empirical investigations focused on the study of the ability to attribute mental states to others and its development from the second year of life (e.g., Baron-Cohen et al. 1985; Bretherton et al. 1981; MacNamara et al. 1976; Shultz and Cloghesy 1981; Shultz et al. 1980). New stories for the false-belief task were created or adapted from the original story. For example, Baron-Cohen et al. (1985) created another famous false-belief test, known as the Sally-Anne task. Sally and Anne are the two main doll characters in the story. After checking that the children know which doll is Sally and which is Anne (*Naming Question*), Sally first places a marble into her basket. Then she leaves the scene. At this point, Anne takes the marble out of Sally's basket and hides it in her own basket. Sally returns and the experimenter asks the child the key *Belief Question*: "Where will Sally look for her marble?". If the children indicate the previous

location of the marble – thinking that Sally believes that the marble is in her own basket – then they pass the Belief Question. On the contrary, if they point to the marble's current location, then they fail the question by not taking into account the doll's belief. Two further control questions confirm these conclusions if children answer correctly: "Where is the marble really?" (Reality Question) and "Where was the marble in the beginning?" (Memory Question). With these questions the experimenter could be sure that the child has both knowledge of the real current location of the marble and an accurate memory of the previous location (Baron-Cohen et al. 1985).

Although children younger than 4 years old usually fail these explicit tasks, it cannot be excluded that some less complex forms of understanding mental states develop earlier. Consequently, in order to investigate the precursors that anticipate the emergence of a more mature representational system, new empirical studies on infants' beliefs have demonstrated, in the last decade, a very early peculiar sensitivity to the false beliefs of others by using implicit looking-time tasks.

If infants are presented with a typical FB task with a change of location from box x to box y and the agent returning to the scene, infants usually show anticipatory behavior searching for box x and look longer when the agent reaches box y rather than box x; moreover, in true-belief control conditions in which the agents witnessed the object's transfer, infants show a reverse pattern, that is anticipatory searching for box y and longer looking times when the agent reaches box x (e.g., Baillargeon et al. 2010).

Many recent studies, which have investigated infants' looking behavior, suggest their ability to reason about other agents' false beliefs. However, it is important to highlight that there is considerable disagreement in literature over the question whether these results show that infants have a concept of belief similar to the one assessed by explicit tasks years later, as reported by Rakoczy (2012, 2017; see also Apperly and Butterfill 2009). Heyes (2014) provided a review of more than 20 experiments on infant false beliefs (e.g., Onishi and Baillargeon 2005; Senju et al. 2011; Song and Baillargeon 2008; Southgate et al.

2007; Surian et al. 2007; Surian and Geraci 2012; Kovács et al. 2010) and argued that positive findings reported by some of these studies are due to domain-general processes, for example, retroactive interference in memory for object location. The criticisms advanced by Heyes certainly open exciting avenues for new research aimed at understanding if infants are really able to appreciate others' states of mind.

ToM and the Possible

There is a very strong relation between ToM and the possible. ToM is based on the possible. When an adult or a child reasons about others' mental states, independently of their own true or false beliefs, they are thinking about the possibility that others could carry out specific behavior or reason in a certain way. Nobody has an absolute certainty about others' thoughts and feelings and sometimes not even about their own. Therefore, the possible plays a central role. To be aware that it is possible to consider a wide range of "beliefs" could enable us to be more functional in attributing mental states to others, also increasing our own mental flexibility.

The possible might be studied from different perspectives. Theories and research on the possible have focused on four key areas – possible worlds, possible selves, possible pasts, and possible futures (for a detailed description of these areas, see Glăveanu 2018). The theory of mind might be strongly linked in particular to the area of the possible selves. This area refers to conceptions of one's self in future states. It's an experience that leads a person, as an agent, through imaginative explorations in past or future situations (e.g., Erikson 2007; Glăveanu 2018; Zittoun and de Saint-Laurent's 2015). Obviously, we can extend this reasoning also considering not only possible selves but also possible others. All humans do not have a predetermined nature; they are beings open to the possible, at different degrees. Possible selves are strongly linked to possible others. The human self and, consequently, all the possible selves emerge from specific environments characterized by different social relations and cultural

resources. Within the boundaries that every being finds initially traced from birth and then, during development, might start tracing by themselves, an infinitive number of actions and interactions can offer specific forms of agency and ways of relating to possible others and forms others have to relate to a possible self (see also Glăveanu 2018).

Starting from these imaginative explorations, we could “construct an evaluative landscape of possible acts and outcomes” of selves and others (according to Seligman et al. 2013, p. 120). Below, we will try to apply an imaginative exploration of our false-belief tasks used to understand the theory of mind.

Consider the classical Sally-Anne task. What possible acts and outcomes can we imagine? The story recounts that Sally placed a marble into her basket and left the scene. Anne takes the marble out of Sally’s basket and hides it in her own basket. Sally returned and the key question is: Where will she look for her marble? The answer is that Sally believes that the marble is in her own basket. However, if we image several landscapes, different key questions and outcomes can come to mind. For example, consider some possible alternatives of Sally’s thought process: (a) the two baskets are identical, Sally does not remember which is hers (the marble is in any case in one of the two baskets); (b) Sally knows that Anne is nosy, and she could think that Anne had looked in her basket and had taken her marble to observe it better, so now the marble could be in Anne’s hand (both baskets are empty); (c) Sally knows that Anne is spiteful, she could think that Anne had moved her marble as a joke to the second basket (the marble is in the second basket); and so on. Endless different scenarios may be created by the imagination. The more different rereadings of the same scenario we are able to make, the better chance we have of understanding exactly what has happened, in particular when we refer to reality. Moreover, we can also consider all the possibilities of why Anne and Sally act out certain behavior. Why does Anne put her marble in the basket? Does she want to hide it, to keep it safe, to take it to someone or give it to them in the basket, and so on. Why does Sally move the marble to the second basket? Is it a prank, or to be spiteful (Sally

was angry with Anne), or is Sally bored and moves the marble just to fill in the time, and so on.

The combination of all the possibilities of decisions, intentions, and even emotions can generate an infinite number of different representations of reality. Experiencing self-other different perspectives offers individuals new views from which to understand and act on the world with flexibility, creativity, and imagination. This experience can significantly enact, increase, and define social interactions and communication, also increasing the well-being of oneself and others.

Summary

In the last few years, we have extended more and more our knowledge about how ToM works, its development, its neural underpinnings, and also about how it is affected by specific clinical cases, such as autism.¹ However, as Rakoczy (2017) highlighted, many different questions remain open for the future. For example, how do we develop from early implicit ToM to later explicit ToM? What are the neurocognitive foundations of ToM reasoning in infants and adults, and how do they change during development?

Furthermore, if we consider the ToM in relation to the possible, new exciting questions arise. What happens if we train people to a divergent way of thinking that considers all the other possible behaviors or mental reasonings? Will their theory of mind change? Will their affective responses, such as empathic responses, and rational judgments change regarding other behaviors and reasonings? Moreover, if people learn to analyze all possible alternatives before acting, they could learn to choose the best alternative for themselves and others. Increasing the consciousness of the variety of situations that the possible may allow people to start seeing the world not as it is, but as it could be, increasing their willingness to improve it.

¹For the sake of brevity, the relation between ToM and various other pathologies has not been included in this entry; for example, the importance of the ToM’s deficits in autism has not been covered; see Baron-Cohen (2000), Fletcher-Watson and Happé (2019), Mitchell (1997).

Cross-References

- Creativity
- Imagination
- Insight

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Thought Experiments

Michael T. Stuart

Department of Philosophy, University of Geneva,
Geneva, Switzerland

Keywords

Thought experiment · Imagination ·
Possibility · Epistemology of imagination

Overview

Thought experiments – like Schrödinger's cat and the trolley problem – are a way for inquirers to focus the power of the imagination. What makes a thought experiment different from fantasies and daydreams is that they aim to produce new knowledge, wisdom, understanding, illumination, or something like that. They typically also have a narrative structure, with a beginning, middle, and end. Usually there are several phases in a thought experiment: one in which we set up some imaginary scenario, another in which we “see” what happens in that scenario, and, finally, one in which we draw some conclusions. At this level of description, thought experiments are like laboratory experiments, except they are carried out in the imagination.

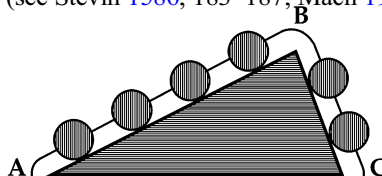
This entry will consider what thought experiments are, who performs them, how they have been investigated, what they aim to do, how they work, and how they connect to the possible.

What is it to be happy? Perhaps being happy is just feeling pleasure, like resting your legs after a long day's work, or listening to a favorite song. Robert Nozick presents a thought experiment to test this view (Nozick 1974). Suppose there was a machine you could enter, which would attach itself to your brain, and stimulate it so that you felt you were experiencing all the pleasures you've always dreamed of: the best food, fame, meaningful work, true love, etc. You would have no memories of entering the machine or of your previous life, and you must enter the machine for the rest of your life or not at all. Would you?

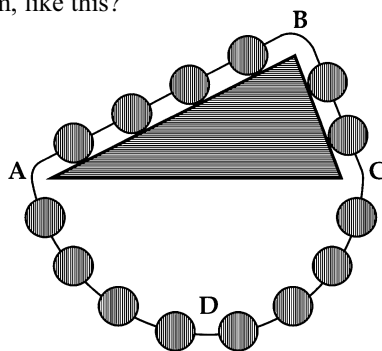
If pleasure is all there is to a happy life, we should all want to enter the machine. But the majority of people would refuse (Hindriks and Douven 2018). Why? Perhaps it is because there is more to happiness than pleasure. Maybe connections to real events and people matter too.

One thing that makes this a thought experiment is that when we begin, we don't know what will happen. We use our imagination, and we learn something new.

Here is another. Imagine a frictionless triangular prism with a chain draped over it, as in the picture below (see Stevin 1586, 183–187; Mach 1905).



How will the chain behave? Perhaps we think the chain will slide toward A or toward C. Okay. But now, what if the chain is connected around the bottom, like this?



Well, in this case, if the chain slides toward A, it will slide that way forever, and we will have a

perpetual motion machine. Same for C. In fact, the slightest motion in either direction will cause a perpetual motion machine. But perpetual motion machines are impossible. So then, what happens? The only other option is that the chain is still. In this case, there is no perpetual motion machine. But what, if anything, does this tell us about the first set-up, where the chain wasn't in a loop? Well since the link of chain at the bottom is a perfect semicircle, it exerts equal downward force on A and C. So removing it will not impact the balance of forces in the system. We therefore have the same balance of forces in both pictures. Thus, because the chain in the second picture must be still, the chain in the first picture must also be still. With this thought experiment, we've just learned something interesting about how chains behave when draped atop frictionless prisms in gravitational fields.

These are thought experiments. They are crucial for many disciplines, including philosophy, physics, engineering, and law. Paradigm examples in philosophy include Hume's missing shade of blue (and invisible gardener), Mengzi's child at the edge of a well, John Searle's Chinese room, Hilary Putnam's Twin Earth (and brain in a vat), Avicenna's falling man, John Rawls' original position, Frank Jackson/Daniel Dennett's color scientist, Judith Thomson's violinist, David Chalmers's zombies, Plato's cave (and Ring of Gyges), Donald Davidson's Swampman, and Philippa Foot's trolley problem.

Well-known thought experiments in science include Maxwell's demon, Laplace's demon, Einstein's elevator (and train), Schrödinger's cat, Isaac Newton's bucket (and cannonball), Heisenberg's microscope, Galileo's falling bodies (and pendulums, inclined planes, and ship cabin), the Turing test, and the prisoner's dilemma.

We find thought experiments in mathematics, especially concerning difficult concepts like infinity. We also find them in art. For example, philosophers have argued that *Huckleberry Finn*, *To Kill a Mockingbird*, *Oedipus Rex*, *Lolita*, *Henry V*, *King Lear*, *Hamlet*, *Animal Farm*, *Uncle Tom's Cabin*, *The Matrix*, and *2001: A Space Odyssey* all might count as thought experiments.

Thought experiments are also used in therapy to help people cope with phobias (Gendler 2004,

1160), in law to help judges make decisions (Maks del Mar [forthcoming](#)), in theology to help interpret scripture (Fehige 2018), and in computer science to help design morally responsible artificial intelligence (Awad et al. 2018). The only field in which thought experiments are claimed not to exist is chemistry (Snooks 2006), but this has recently been shown false (Stuart manuscript).

Definition and History

The term "thought experiment" was coined by Hans Christian Ørsted (1811) as a label to describe some of Immanuel Kant's work.¹ After Ørsted coined the term, the first seminal writing on the topic was Ernst Mach's in 1905. This drew the attention of Moritz Schlick (see Dohrn 2018), Alexius Meinong (1907), and Pierre Duhem (1914; see Buzzoni 2018a). In the 1960s, many of the most influential philosophers of science began to write about thought experiments, including Karl Popper (1959), Thomas Kuhn (1977), Imre Lakatos (1976), and Paul Feyerabend (see Arthur 1999, Stuart 2020).

The literature expanded greatly starting in 1986, the annus mirabilis of thought experiments (Fehige 2020). In this year, James R. Brown first laid out his controversial epistemology of thought experiments, and the first conference on thought experiments was held at the University of Pittsburgh (the proceedings were later published in Horowitz and Massey 1991). A number of important monographs and papers quickly began to appear, including Brown (1991a), Sorensen (1992), Häggqvist (1996), Gendler (2000), Kühne (2005), Swirski (2007), Ierodiakonou and Roux (2011), and Frappier et al. (2013). Historical studies have since been produced on, for example, thought experiments in the presocratics (Ierodiakonou 2005, 2011, 2018; Rescher 2005, ch. 4); Plato (Becker 2018); Aristotle (Corcilius 2018); Ibn Sina, Ibn al-Haytham, and Abu Hamid

¹ Similar notions (under different names) were in circulation before Ørsted. For example, we find some of these in the work of Georg Christoph Lichtenberg, Novalis, and Immanuel Kant (see Schildknecht 1990; Daiber 2001; Fehige and Stuart 2014).

al-Ghazali (McGinnis 2018);² Galileo (Koyré 1968; Palmerino 2011; Palmieri 2003, 2018); Newton and Leibniz (Arthur 2018); Kant (Buzzoni 2008, Fehige and Stuart 2014); Hegel and Wittgenstein (Westphal 2018); Ragnar Frisch (Herfeld 2019); Einstein (Norton 1991; Schlesinger 1996, 473–76); Maxwell (Krimsky 1973, Myrvold 2011, Stuart 2016a); Heisenberg (Popper 1959, Van Dyck 2003, and Camilleri 2007, Stuart 2016a); and many others. And now there are also broad, discipline-focused overviews of thought experiments in physics (Peacock 2018), biology (Schlaepfer and Weber 2018), politics (Miscevic 2018), theology (Fehige 2018), ethics (Brun 2018), economics (Schabas 2018), and mathematics (Starikova and Giaquinto 2018).

Despite all this, there is no agreement about how to define a thought experiment. As we will see, thought experiments have been characterized as fictions, arguments, models, intuition pumps, and much else. Geordie McComb claims that they are best conceived as having only a “family resemblance” in common with each other (2013).

So, there is no agreed-upon definition. But maybe we can define the *performance* of a thought experiment. This is the proposal of Tamar Gendler, who claims that performing a thought experiment is reasoning about a particular set of circumstances that are accessed via the imagination. It must have the purpose of confirming or disconfirming a hypothesis or theory. And the particular circumstance imagined must be more specific than the conclusion of the thought experiment (Gendler 2004, 1155).³ This last requirement is what gives thought experiments their *experimental* flavor: laboratory experiments derive general conclusions from specific circumstances and events, so thought experiments should as well.

However, there are thought experiments that pose questions rather than offer answers (like the Ship of Theseus⁴). And some thought experiments do not even pose a question: instead they aim only to illustrate a theory or theoretical claim (Brown 1991a, 32; Peacock 2018; Schabas 2018), “exemplify” properties (Elgin 2014), or provide “hypothetical explanations” (Schlaepfer and Weber 2018).

To make matters worse, there is also no agreement on how a thought experiment works. For example, some philosophers argue that a central feature of thought experiments is that they produce an intuition, which then serves as evidence for a claim (Brendel 2004, Brown 1991a, Dennett 2013, Mišćević 2018). Others disagree. For example, John D. Norton argues that thought experiments are just logical arguments, and thus whether they produce intuitions or not is largely irrelevant.

Perhaps we could proceed along the *via negativa* and try to distinguish thought experiments from what they are not. One obvious place to start is their context. Consider the following schema inspired by Brown (2007, 158)⁵:

Theory & Background → Mental Experience
→ Interpreted Result

Using this, we can distinguish between what Brown calls narrow and broad conceptions of thought experiments. On the narrow conception, the thought experiment is simply what happens in the mind: it is what we “see” happen in the imagination. It is not the background or the interpretation. On the broad conception, a thought experiment includes all of the above: it begins

²Did all of these people *really* conduct thought experiments? As James McAllister (2018) argues, the term “thought experiment” includes the modern Western concept of scientific experiment, which arguably did not exist before Galileo. When it is legitimate to attribute a thought experiment to a historical figure? This is an open question.

³Gendler’s definition takes elements from John D. Norton’s earlier definition (see Norton 1991, 129).

⁴According to Plutarch, Theseus returned to Athens on a ship. This famous ship became a tourist attraction, and had its planks replaced, one by one, as they decayed. The question is, if all the parts are replaced with new ones, is this still Theseus’s ship? If not, at what point does it cease to be the same ship? This thought experiment has developed over time, and there are now many more elaborate versions.

⁵Something like this distinction was first made by Hans Radder (1996) when discussing laboratory experiments. It was then applied to thought experiments by Sören Häggqvist (1996) and Tim De Mey (2003).

with the theoretical background and the question to be answered, includes the mental experience, and ends with an interpretation of the mental experience as an answer to our initial question. However, the cogency of this distinction would be rejected by those who hold that thought experiments are merely arguments (e.g., Norton 1996). On this view, all that matters for identifying a thought experiment are the premises, conclusion, and mediating inferences. There can therefore be no narrow conception of a thought experiment, because elements of background theory will be premises in the argument, and therefore they cannot be separated from the thought experiment without eliminating it. Likewise, the interpreted result is the conclusion of the argument, which also cannot be separated from the thought experiment.

In addition to the above disagreements, there is also no settled taxonomy of thought experiments. For some attempted taxonomies of thought experiments, see Popper (1959), Brown (1986, 1991a), and Boniolo (1997).

Because of these difficulties, some philosophers have judged it best to specify in advance a particular class of thought experiments they are interested in, in order to make more piecemeal progress (e.g., Häggqvist 2009, Cohnitz and Häggqvist 2018). Others try to use evidence about the use of thought experiments (e.g., in science or philosophy), to convince others that there really is a single nature or function for all thought experiments. We will focus on this latter strategy first.

One of the most discussed problems about thought experiments is how thought experiments are able to lead to new knowledge or understanding, despite not requiring new experience. James R. Brown's answer is that performing a thought experiment produces a new phenomenon in the mind (1986, 1991a, 1991b, 1992, 2004, 2007). This phenomenon can serve as "fairly conclusive" evidence for a theory (2011, 43).

John D. Norton (1991, 1993, 1996, 2004a, b) has been Brown's main foil. He argues that thought experiments are nothing but arguments. We gain new knowledge from thought experiments only by rearranging or logically extending

existing knowledge. For Norton, all thought experiments succeed or fail only insofar as they instantiate logically good arguments.

Several accounts attempt to mediate between Brown and Norton. These accounts all argue that thought experiments are more than mere arguments, but less than sources of knowledge derived from pure reason. Perhaps the most popular account is one that draws on cognitive science and was proposed independently by Nenad Mišević and Nancy Nersessian in 1992. The idea here is that thought experiments are "mental models." In other words, the narrative presentation of a thought experiment triggers the creation of a mental model, which is "a structural, behavioral, or functional analog to a real-world phenomenon" (Nersessian 2018, 311). The mental model is analogous to a real-world phenomenon in the sense that it accurately represents it, including the constraints on it. Mental models typically embed a specific and personal point of view, tend to be visual or quasi-visual, and are justified by drawing on embodied knowledge (Nersessian 1992).

Another account might be called "experimentalist." This kind of account focuses on the relation between thought experiments and laboratory experiments. Roy Sorensen (1992), postulates that thought experiments are on a continuum with laboratory experiments. For him, thought experiments perform one of the functions that laboratory experiments can perform, namely, finding and eliminating inconsistencies in our theories. Gooding (1992) emphasizes the embodied nature of thought experiments, in order to explain a sense in which they are like real experiments. And Stuart (2016b) argues that the epistemology of laboratory experiments can be used to evaluate the epistemic value of thought experiments: specifically, the principles for effective laboratory experiments can also be usefully applied to thought experiments. Finally, Marco Buzzoni has pointed out that there are different senses in which thought experiments can relate to laboratory experiments (Buzzoni 2008, 2018b): in one sense, thought experiments are necessary for laboratory experiments, because an imagined experiment must always precede a laboratory experiment. In this

sense, thought experiments are a condition for the possibility of laboratory experiments. On the other hand, experiments of all kinds ask questions to nature and attempt to provide answers, so in this sense, thought experiments and laboratory experiments are just the same.

There is also a fictionalist view of thought experiments (Meynell 2014, 2018; Salis and Frigg *forthcoming*). On this account a thought experiment is a fiction, and our role as thought experimenters is similar to the role of children playing a game of cops and robbers: we set some things as true in the fiction and use props to focus our imaginations. For example, in a game of cops and robbers, sticks might be guns, a set of rocks might be a jail cell, and if you are a robber and you are touched by a cop, you go to jail. The description of the thought experimental scenario plus some implicit or explicit rules of reasoning tell us what we must imagine and what we are allowed to do in the game. The rest is up to us. By reasoning through the imaginary scenario in accordance with the rules, we learn what else is true or false in the scenario. This enables us to learn from thought experiments, insofar as these tell us what things would be like in a given hypothetical world, which is significant because in some cases, that hypothetical world turns out to be the actual world. For example, in a series of famous thought experiments, Galileo asked what the world would be like if Aristotle was wrong about motion, and this enabled Galileo to make progress (since Aristotle *was* wrong).

Criticism of Thought Experiments

Some thought experiments seem too far-fetched to draw conclusions about the real world (Wilkes 1988). Some of them seem to promise necessary truth, which is something they might be unable to provide (Thagard 2010, 2014). They employ abstract situations, when what we often want are concrete details (Dancy 1985). And they rely on cognitive systems evolved for everyday scenarios, which can be inappropriate for complicated scientific systems (Bokulich 2001). For scientists these criticisms are more or less easily resolved, since

mathematical derivations and laboratory experiments can be appealed to when we want to settle disagreements. However, such recourse is not usually available for philosophers. Given that thought experiments appear to be a central part of the philosophical method, criticisms of the use of thought experiments must be taken seriously. The greatest modern challenge comes from what is called “experimental philosophy.” Beginning in the early 2000s, this movement has led to a methodological crisis that is still developing (for overviews see Knobe and Nichols 2017, Sytsma and Buckwalter 2016, Machery 2017, Stich and Tobia 2018).

Philosophers want to know about things like knowledge, love, happiness, and justice. They produce theories and test them using thought experiments. Experimental philosophers typically present short thought experiments to people, collect the responses, and analyze the data statistically. Some of the results suggest that the intuitions resulting from thought experiments are not shared among different groups of people, and they can be influenced by irrelevant factors including age, gender, culture, native language, level of education, religious belief, and ambient sights, smells, and sounds. We trust our vision because everyone agrees that an apple is an apple, regardless of age, sex, culture and sensory context. If we assume that the nature of knowledge, truth, justice, etc., are objective (like apples), then our intuitions about them appear only to reflect our subjective opinions, not objective facts (Sinnott-Armstrong 2008, 67; Stich and Tobia 2018, 374).

One response to this problem denies the diversity of intuitions. For example, a study by Machery et al. (2015) shows that intuitions about a particular thought experiment *are* shared by people in Brazil, India, Japan, and the USA, despite the fact that earlier studies claimed to show that they varied according to cultural context.

Another response has been to claim that intuitions resulting from thought experiments are informative, but only when the intuitions are *carefully considered* and when they are the intuitions of *experts* (Williamson 2007; Ludwig 2007,

2018). We should not be surprised that the intuitions that regular people have about quantum mechanics are easily manipulated; what matters are the intuitions of professional physicists. In reply, experimental philosophers have produced evidence that (they claim) shows that professional philosophers have corruptible and unstable intuitions too, even when it comes to philosophical topics (e.g., Schwitzgebel and Cushman 2015; Tobia et al. 2013; Schulz et al. 2011).

A third response to the challenge of experimental philosophy argues that the real job of philosophy is to tell us how we *should* characterize things. Thus, even if everyone had different intuitions about justice, this would not prevent us from fashioning a *better* concept of justice, one that people *should* possess. However, if philosophers still need thought experiments to generate and test their normative accounts, and these are fundamentally unreliable, the problem remains.

Experimental philosophy originally cast doubt on the use of thought experiments. But these days it also invents and employs its own thought experiments to identify new connections between philosophically relevant concepts. For example, here is a thought experiment created by experimental philosopher Joshua Knobe (2003) to test the influence of ethical judgments on attributions of intentionality:

The vice-president of a company went to the chairman of the board and said, 'We are thinking of starting a new program. It will help us increase profits, but it will also harm the environment.' The chairman of the board answered, 'I don't care at all about harming the environment. I just want to make as much profit as I can. Let's start the new program.' They started the new program. Sure enough, the environment was harmed.

Knobe asked participants whether the chairman *intended* to harm the environment. 82% of participants said he did. Now, and here is where it gets interesting, if you give the participants the exact same scenario but replace "harm" with "help," 77% of participants say that the chairman did *not* intend to help the environment. This result seems to imply that there is an important (and previously unrecognized) connection between ethical judgements and judgments about which

actions are done intentionally. This finding has now been extended from judgements about intentionality to judgements about what people want, desire, decide, advocate, oppose and know (see Pettit and Knobe 2009, Guglielmo and Malle 2010, Beebe and Buckwalter 2010).

In sum, thought experiments appear central to the methodology of philosophy, but their appropriateness and effectiveness have been challenged, and it is an open question how to respond. To muddy the waters further, the source of the challenge (experimental philosophy) now uses thought experiments as well.

Thought Experiments and Pedagogy

Because thought experiments are rhetorically and epistemically powerful, they are often used by educators. Their narrative structure, for example, makes them easy to remember. And the fact that they are open-ended requires students to think through complex issues on their own, which can stimulate learning and the development of new skills.

In support of claims like this, there are several social scientific studies which have been performed on students. Gilbert and Reiner (2004) found that students as young as 12 were competent with thought experiments. Others have shown that students resort to thought experiments on their own when faced with difficult conceptual problems (Köse and Özdemir 2014, see also Reiner and Gilbert 2000, 502). Thought experiments are used effectively by educators to elicit tacit beliefs (Reiner and Burko 2003, 380), to effect conceptual change (Helm et al. 1985), and to help students learn from performances of laboratory experiments (Matthews 1994). Yannis Hadzigeorgiou summarizes the general pedagogical benefits of thought experiments as helping students in (a) developing a creative imagination, (b) developing logical arguments and creative thinking, (c) developing problem-solving skills, (d) learning how to effectively modify laboratory experiments, (e) clarifying concepts, and (f) changing concepts (2016, 24).

This research on this topic is still growing, and there are many possible directions for it to go. For

example, are thought experiments equally useful in all fields and for all kinds of student? How do the spontaneously created thought experiments of young students differ from those of professional researchers? And are there ways to make educational thought experiments more effective?

Thought Experiments and the Possible

Thought experiments focus the imagination like telescopes focus light. This means that they connect to “the possible” in many of the same ways that imagination connects to the possible: by exploring possible worlds, possible selves, possible pasts, possible futures, and possible theories (see Glăveanu 2018). It is taken for granted by many philosophers that thought experiments can provide a window into the possible. For example, because Descartes can imagine that all of his beliefs are the product of a malignant demon’s deceptions, he takes it to be possible that this is the case.

Some argue that if we can imagine a scenario in some detail, this gives us a reason to believe that it is possible. However, we appear able to imagine impossible things. For example, it is easy to imagine things that are nomologically impossible (i.e., inconsistent with the known laws of nature, e.g., the gravitational constant being slightly stronger), although it is very difficult to imagine things that are logically or conceptually impossible (e.g., a circular square). Thus, some philosophers claim that imaginability should only be used as a *guide* to possibility, at best (Yablo 1993; Gendler and Hawthorne 2002). But why should it even be a guide?

This is an open question. Some argue that the mind evolved to imagine certain things accurately, because it benefited our early ancestors (Williamson 2016, Sorensen 1992). Thus our imaginations tell us whether and how fast we could climb a certain tree if a nearby wild animal were to charge, because that is something that could save our life. But in this case, we should expect our thought experiments not to be useful in telling us what a quantum system will do (Bokulich 2001). And yet many scientists use thought experiments to make great leaps of understanding concerning what is possible in very

“unintuitive” scientific systems, including quantum ones. One way to explain this is by reference to constraints: scientists learn the constraints on systems of interest, and they use these to constrain their imaginations in thought experiments (Kind 2018, 244). This might be a plausible explanation for many thought experiments, but not for those which purposely break reasonable constraints and still make scientific progress despite, or because of, breaking the constraints (Stuart forthcoming).

Another connection between thought experiments and the possible is a special use of thought experiments, favored by Kant, Hegel, and Wittgenstein especially, which we might call “transcendental” (see Westphal 2018). These thought experiments ask us to imagine something, and we find that we cannot. From our failure, we draw an inference about the limits of the human mind or our theories. For example, in his discussion of space and time, Kant asks us to imagine various things that are not in space or time. We can imagine space without objects in it and times in which nothing happens, but we can’t imagine, for example, an apple that does not exist in space or time. Kant uses this to conclude that space and time aren’t things in themselves, but concepts that we use to organize our experience (Critique of Pure Reason, A24-31/B38-46). Einstein does something similar with his chasing a lightbeam thought experiment against Maxwell’s theory of light (see Norton 2013). This kind of thought experiment is interesting because it uses our *inability* to imagine something as evidence in support of claims about the limits of our minds and conceptual frameworks, and perhaps also about the world itself.

Summary

Thought experiments are tools of inquiry that use imagination in order to gain insight. Through them, we seem able to get glimpses of how the world is, how it could be, and how it could not be. Philosophers, cognitive scientists, and social scientists are concerned with how they do this and what roles are played by things like logic, intuition, imagination, idealization, and images. Since they are a fundamental part of philosophical

methodology, the fact that they have recently come under scrutiny has been and will remain a central question until it is (re)solved. Some open questions include whether it's possible to give a satisfying definition or taxonomy of thought experiments, and how thought experiments relate to fiction, art, imagination, and emotion.

Cross-References

- Fiction
- Possibility Thinking
- Possible in Logic
- Possible in Philosophy
- Possible in Visual Arts
- Possible Worlds
- Problem Finding
- Reality
- Scientific Modeling
- Simulation
- Speculation
- “What If” Thinking

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Tolerance of Ambiguity

Henderika (Herie) de Vries
Yale University, New Haven, CT, USA

Abstract

The present chapter aims to describe tolerance of ambiguity (TA) to make it more tangible, to disambiguate without reducing, and indeed expand the concept. The concept depends on and is shaped by perspectives related to cultural contexts, points to how humans relate to an immediate or distant future, and has emergent properties. TA seems to share meanings and properties with the concept of “Possibilities.” TA might in fact encompass both “Possibilities” as well as “Uncertainties,” representing two sides of the same coin. Broadly, all these concepts are found in the spaces between nature and humans’ relation with them. Above all, the TA concept is amorphous, abstract, and covers relationships with other concepts in a wide array of domains. Aspects are discussed in relation with existent literature, time issues, levels and lenses of research, and an application in the domain of creativity. Throughout the chapter, possibilities are suggested for further directions of research. Central to understanding and measuring TA is its cultural embeddedness, also of the researcher her/himself.

Keywords

Tolerance of ambiguity · Uncertainty · Culture · Measurement · Cultural actuation model · Creativity

Introduction

The concept of tolerance of ambiguity could perhaps best be explained with an analogy of a parable from the famous poet Rumi. Several persons tried to grasp the concept of an elephant by touching it in the dark (in Keshavarz 2007). Because everyone could only reach one part, and no one

could see the whole elephant, each one defined it differently. The inevitably limited human experience likewise could determine interpretations of the concept of tolerance of ambiguity (TA).

Consequently, each researcher and writer will approach TA from specific angles. TA can be described as an “essentially contested concept” (Gallie, in Levine 1985). Maybe the level of TA of individuals themselves also influences conceptualizations (De Vries 2018), which vary from suggesting there is no need to eliminate ambiguities, to arguing that, based on studies, tolerance of ambiguity does not exist (e.g., Kenny and Ginsberg, in Levine 1985). Scientists have for a long time attempted to fathom this elusive, but to all aspects of life-permeating, concept. There exist many definitions of TA today, and it generally concerns the levels of stress that individuals experience in the face of the unknown future, ambiguous information, and change.

Before diving into more theoretical aspects, it might be useful to make the phenomenon more concrete. Frenkel-Brunswik (1949) described TA as a “general social attitude which pertains to the whole being.” Many of today’s measurable psychological constructs did not exist then, and ought to be researched, in relation with TA. Furnham and Ribchester (1995) mentioned that TA can refer to individuals and also to groups. A logical question might therefore be: Can we observe TA, and what is the difference between individuals with high and low levels of it? In a portrayal of imagined (nonexistent) individuals from extremely high and low levels of TA cultures, Hofstede et al. (2002) described groups with low levels of avoidance of ambiguity and uncertainty (low avoidance = high tolerance) as groups having core values of “exploration” and “patience,” and individuals only adhere to rules that are absolutely necessary. What is different is perceived as curious, and generalists (not specialists) are valued. Words such as *maybe*, *spontaneous*, *unstructured*, *loose*, *relativity*, and *experiment* have a positive connotation. Words such as *structure*, *safe*, *predictable*, *tight*, *law*, and *duty* are seen as negative. Language use is soft (not loud), and unprecise, and high-level TA individuals often ask open questions. Nonverbal behavior is

marked by informality, by not being in a hurry, relaxedness, and having no taboos. Extreme low TA level individuals on the other hand exhibit a high need for certainty, and a preoccupation with truth. Rules are important, even if they do not work, and what is different is dangerous. Therefore, only familiar risks are accepted. There are rigid taboos of what is dirty, wrong, or indecent. Extreme low-level TA individuals argue a lot, are loud, quickly judge a situation as right or wrong, and are uptight. They externalize stress and make others feel stressed. The preference of language use is the opposite of that of highly tolerant individuals.

Overall, from a perspective of individuals with low levels of TA, individuals with a high level of TA, could also be described as being “wishy-washy,” as having no principles, and being pragmatic. The lack of structure is also visible through a certain fluidity or overflow. It is important to realize that without an understanding of the learned origin and therefore relativity of values and perspectives – considering there are no absolute criteria for measuring this either (Lévi-Strauss 1979) – both individuals with low or high levels of TA could wrongly be judged as negative, or positive.

Getting back to the scientific underpinnings of TA, although recent research has increased insight, there is still no consensus about its nature (Furnham and Marks 2013; Berenbaum et al. 2008; Jach and Smillie 2019; Hancock and Mattick 2020). Questions remain on how it relates to the Big Five personality traits, and other cognitive variables such as “need for closure” (Berenbaum et al. 2008). Researchers have also addressed the improved but still weak psychometric properties of self-measure scales of TA. For example, even one of the theoretically most robust scales of TA from Budner (1962) had a low internal consistency (0.49) (Furnham 1994).

Recently Merrotsy (2020) indicated again the need for research: “Since Frenkel-Brunswik in 1949, there has been sparse research conducted on its applications, in particular with respect to the study of ethnic and national cultures, of marketing, and of organisations, including business management and the armed forces” (2020, p. 647).

Merrot'sy's quote also demonstrates possibilities of domains where TA could have an impact. Many relations exist between TA and other concepts apart from authoritarian behavior (Adorno et al. 1950), the original motivation to develop the concept.

A domain where TA can be studied is creativity, interesting also because it is regarded as a main predictor (Stein 1953; Tegano 1990; Stoycheva et al. 2008; Tang and Chang 2010; Toh and Miller 2016). An example is a cross-cultural study of creativity and TA (De Vries et al. 2016; De Vries 2018, 2021).

Despite today's bulk of research, theoretical underpinnings of TA suggest that what is known today could still only be "minor parts of the elephant." This chapter will emphasize new possibilities to discover unknown aspects and dimensions of the concept of TA, rather than giving an exhaustive overview of TA literature. It addresses the origin of the TA concept, levels and lenses of research to explore, and the inherent time aspect related to the distinction between uncertainty and ambiguity. It further addresses measurement issues and relations with other concepts. Throughout this chapter new possibilities are mentioned of this "unitary, yet multifaceted" construct (Herman et al. 2010). The chapter is finalized with a summary.

TA Concept

Origin

The concept of TA can be traced back to philosophical, psychological, social, and organizational research roots. The philosopher Kierkegaard (1813–1855) mentioned that life itself is essentially ambiguous. Anxiety would be caused by the fear or "dizziness" of freedom because of life's ambiguities, which most people cannot bear ("Begybet Angst," or "The Concept of Anxiety," 1963). Later, empirical evidence confirmed a relation between TA and anxiety (e.g., Bardi et al. 2009).

Another example is last century's philosopher Fromm (1900–1980) who related religion to "existential angst" (Fromm, 2014). This is an

awareness of human freedom but at the same time also of the powerlessness before nature. In times as during a pandemic, humans might become more conscious of ambiguity and uncertainty, which according to Kierkegaard and Fromm is there at all times. Humans can embrace or escape freedom. Later, in "Ethics of Ambiguity", existential philosopher de Beauvoir (1947) described consciousness as ambiguous and that it limits humans' passion for meaning making.

The psychological research of Frenkel-Brunswik (1949) drew from psychoanalytical theory for the development of TA. It is fostered through the relationship children have with their parents. When parents are too aggressive, the naturally ambiguous feelings children have become repressed, and rigid thinking develops, which is now unintelligible, because it is based on obedience to dichotomized, external rules such as dominance-submission, clean-dirty, etc. and ambiguity is no longer tolerated. Frenkel-Brunswik further argued that TA impacts feelings, attitudes, interpersonal and social functioning, cognition, and problem-solving style as well as perception. This leads to the question whether researchers can explore more using today's possibilities to assess psychological constructs.

For example, how does TA relate to the malevolent personality traits of the "dark triad" (narcissism, Machiavellianism, and psychopathy [Paulhus and Williams 2002]) or "tetrad" (adding sadism) (Reidy et al. 2011)? How does social identity relate to TA (Stets and Burke 2000)? Another possibility to explore are Dabrowski's overexcitabilities (OE) 1967, the psychomotor, intellectual, sensual, emotional, and imaginal OEs. Some have already been studied in relation with TA. Examples are ambiguities related to senses like taste (Kolb 1995), and in listening to or composing music, and ambiguity in tempo perception (McKinney and Moelants 2006; Pressnitzer et al. 2011).

The origin of TA as it pertains to groups or societies is embedded in the definition of the cultural value dimension of uncertainty avoidance (UA) (Hofstede 1984, 2011), who defined it as the extent to which uncertainty and ambiguity are tolerated, and how unknown situations and

unexpected events are dealt with. UA is related to tolerance of the unknown future, caused by nature, other people, or transcendental forces. UA was derived from organizational theory (Cyert and March 1963). The Global Leadership and Organizational Behavior Effectiveness (GLOBE) project (Sully de Luque and Javidan 2004) interpret and use the concept of uncertainty avoidance in a slightly different manner. These authors measured “practices” and “values.”

More studies might also be needed on UA in general, as it is not completely independent of other dimensions (Minkov and Hofstede 2014). This raises the overall question if in today’s research the full breadth of the concept of tolerance of ambiguity is covered, and whether the interrelation of individual and group level of TA needs further clarification.

Interestingly, one of the earliest cultural philosophers, Simmel (1858–1918), already mentioned different levels of analysis in combination with differences of individuals’ naturally ambivalent tendencies. He mentioned how social interactions become a societal, structured phenomenon.

Conformity, individuation, antagonism and solidarity, compliance and rebelliousness, freedom and constraint, publicity and privacy, as so many sociological dualisms are compresent in social interactions and constitutive of various social relationships. These dualisms, [...] are inherent in social forms both because of man’s ambivalent instinctual dispositions and because society needs to have some ratio of discordant to harmonious tendencies in order to attain a determinate shape. (Levine 1985, p. 9)

As many cultural researchers have shown (e.g., Hofstede 1984, 2011; Schwartz 1992; Gelfand et al. 2011; Triandis 2018), societies organize themselves according to “different ratios of dualisms.” TA is also related to “conservatism,” one of Schwartz’s cultural dimensions. Gelfand’s and colleagues’ (2011) distinction between “tight” and “loose” societies has similarities to UA as in a higher or lower need of strict rules.

Something else, however, seems “hidden” in Simmel’s quote: There is a dynamic going from abstractness to concreteness. Human instincts are abstract, whereas societal values have a “determinate shape.” Because TA is related to *how* humans

interpret the world, there is an emergent property embedded in the concept as well.

Overall, the origin of the concept of TA is related to how humans exist in a naturally ambiguous environment, and was developed by philosophers, sociologists, and psychologists. There is a need today to further relate TA to new psychological constructs, explore new domains, and gain insight from different perspectives and on different levels of research, described in the next paragraph.

Levels and Lenses

To gain insight in the scientific concept of TA developed from different research domains, as with Rumi’s elephant, it helps to consider more levels and lenses of analysis. For example, within an empirical research tradition, besides an *individual* differences approach of TA and research on *societal* levels of TA, it could also be studied on an *organizational* level. An example would be the theory of “Murky environments” (Sternberg 2014). According to Sternberg, a new organization can cause uncertainty, be unclear and confusing, for people navigating it. A new school can, for example, represent a “Murky environment” also for a student who navigates it, to get good grades or make friends. Another example are astronauts on a space mission navigating in a “Murky environment,” when they navigate the organizational context in an unknown and extreme human environment.

Another possibility represents studying the *interrelation* and *interaction* of TA on different levels as with the uncertainty management theory, where interactions of uncertainty of a person, task, procedure of an organization, and the context are analyzed (e.g., Lind and Van den Bos 2002; Thau et al. 2009). This is based on the anxiety/uncertainty management (AUM) theory of Gudykunst (1995) and implies a principle of balance between two levels, a maximum and minimum level of anxiety/uncertainty that humans manage in interactions. Gudykunst et al. (1996) focused on causal explanations of social behavior and found individual values rather than cultural values to be a better predictor of behavior. Taking the study from Gudykunst one step further, Kam-Chung Chan

et al. (2004) defined dimensions of “interaction concerns” like “rapport promotion,” taking into account personal values, *situational* constraints as well as cultural values. Beghetto’s (2019) work on the related concept of uncertainty in educational contexts focusses specifically on uncertainty in structured *experiences*.

Sociocultural measurement of TA is based on theories that the psychological and cultural constructs “make each other up” (Shweder 1990). Rather than correlations between individual, interaction, and society levels, Gutiérrez and Rogoff (2003) describe *planes* and *lenses* of research. Culture is seen as a process rather than an influence, to be studied in “*repertoires of practice*,” or “*cultural scripts*” (Gorgorió and Planas, 2005). Sociocultural research into TA and uncertainty is still rare and mainly within the domain of science learning. For example, Kirch (2009) describes children doing science as identifying and resolving uncertainty as a mediated action by analyzing conversations. Metz (2004) examined “five spheres” of uncertainty derived from investigative procedures. Other interaction research is based on Berger and Calabrese (1974), as analyzing high uncertainty tolerance and intimacy in forming friendships (e.g., Redmond 2015; Knobloch and Miller 2018). Again, another example forms research describing how class *behaviors* and uncertainty might interrelate (Moran 2010). Concerning behaviors, Hofstede also found empirical evidence of levels of TA and behaviors in educational environments, organizations, and parental styles (Hofstede et al. 2005; Hofstede 2011).

Taken together the possibilities of investigating TA through different lenses and levels seems only at the beginning, and there might be many ways to investigate TA, or Rumi’s “elephant,” further.

Time Aspect: From TA to TAU

In an attempt to disambiguate TA, some scholars make a distinction between tolerance of ambiguity and tolerance of uncertainty, whereas others use both terms interchangeably. Some state that tolerance of ambiguity is a personal variable, and uncertainty avoidance a sociological variable

(e.g., Furnham and Ribchester 1995; Furnham and Marks 2013).

Grenier, Barette, and Ladouceur (2005) noticed about the relation of neuroticism and TA, that TA refers to a static component embedded in the present. Individuals are able or unable to tolerate a “here and now” ambiguous situation. Individuals that have no tolerance of uncertainty, however, would consider it unacceptable that a future and negative event may occur, even when there is only a small probability.

Other researchers argued that theoretically “the present” does not exist, that TA and UA represent the same, and simply represent a smaller or larger time difference (Minkov and Hofstede 2014). A more complete term would therefore be “Tolerance of Ambiguity and Uncertainty” (TAU). Although the time distinctions seem futile, time as it represents change, really is at the center for understanding the construct, and surveys of TA do not always include the time-related aspect of the “unknown close and distant future.”

Cultural differences in time perspectives are reflected in cultural values and could be seen as an evolutionary adaptation, related to group survival. In the animal world, time in relation to space is of the essence for prey organisms struggling against predators. This is how Jaensch (1938) indeed interpreted TA. He was probably, before Frenkel-Brunswik, the first to empirically isolate a predilection for ambiguity as a personality variable. Jaensch noticed that people differed in how stable their coordination in perception in relation to corresponding points of the retina of the eye were.

According to Jaensch, this stable personality type was preferable above the so-called “anti-type” that showed instable and “liberal” styles of perception and, in his opinion, cognition. For Frenkel-Brunswik, the opposite was true. She found a correlation between the authoritarian personality type and crude stereotyping, with rigid defenses and general lack of insight (1948). Therefore, she did not share the glorifying of Jaensch’s “unambiguous perceptual reaction personality type.”

In his book *The Open and Closed Mind*, Rokeach (1960) elaborated on the time dimension

of human beliefs and linked a narrow time perspective to dogmatic thinking, which concerns “systems of belief” (paradigms), instead of rigid thinking related to thinking within one system.

The knowledge aspect relates further to the “uncertainty principle” of Nobel prize laureate and physicist W. Heisenberg (1927/1930). According to Heisenberg, science is related to uncertainties of measurement, but also to humans’ understanding of and relation with nature, with concepts and language, and a human’s predisposition. Gaps of knowledge are determined by what is abstract and concrete, which varies according to different cultures.

TA is developed by learning norms, rules, and values of societies. The variation of societies in dichotomizing rules is related to the specific gaps of knowledge. The higher the level of TA, the more there is also a reduction of understanding of reality. A leader, for example, can symbolize values, and if followers adhere rigidly to these values, this then obscures realities, and ultimately can lead to dictatorships.

Overall, the time aspect is a central aspect of the TA concept, and it also determines if the concept of uncertainty is integrated, which can add to insights of related aspects of TA. A main original motivation of Adorno and Frenkel-Brunswik was how to secure peaceful societies, and to escape dictatorships. By emphasizing the time aspect and as a consequence integrate uncertainty as a component of TA, it is possible that more insight can be gained on this ever-important topic.

Measurement

TA is mostly measured through *self-report surveys* with items on attitudes (MacDonald 1970; Rydell and Rosen 1966; McLain 2009; Buhr and Dugas 2006; Dugas et al. 2004; Freeston et al. 1994; Greco and Roger 2001). Because of differences in definitions of TA, different measurement tools exist. Budner’s scale (1962), widely accepted also for its robust theoretical underpinning, for example, defines tolerance of ambiguity as “the tendency to perceive or interpret

ambiguous situations as a source of threat.” According to Budner, situations (or contexts) can be novel, complex, or insoluble. His “Intolerance to ambiguity scale” is based on philosophical principles. There is an intolerance when reality is altered to suit the desires of the perceiver. This can be done through (1) phenomenological denial (repression and denial), (2) phenomenological submission (anxiety and discomfort), (3) operative denial (destructive or reconstructive behavior), and (4) operative submission (avoidance behavior). Ambiguous situations are further distinguished as novel, complex, or insoluble. Despite the robust philosophical model, the Budner scale had a low internal consistency (0.49). It is interesting to notice that Budner’s model distinguishes a more cognitive (1), emotional (2), and action-oriented (3 and 4) facets.

In an ongoing attempt to clarify the concept of TA at the individual level, different researchers over time enhanced psychometric properties (e.g., Furnham 1994; Freeston et al. 1994; Buhr and Dugas 2006; Norton 2005). Furnham’s comprehensive content, as well as correlational and factor analytic study of four main TA questionnaires clarified some of the ambiguities of the construct. He discovered that the four most broadly used scales (Budner 1962; Norton 1975; Rydell and Rosen 1966; O’Connor 1952) consisted of multi-dimensional scales. Factors concerned, for example, tolerance of ambiguity related to preferences, anxieties, and philosophic and epistemological preferences.

Whereas scale items are mostly based on theory, the names to describe the factors mostly are not. As a result, comparing results of different analysis of found factors seems limited. Norton (2005) noticed that factors vary mainly with samples of different ethnicities.

Another issue is that most of the TA scales do not discriminate between different human functions as intended by Frenkel-Brunswik. The Budner scale and the TA scale of Greco and Roger (2001) are exceptions. Greco and Roger constructed their uncertainty response scale (URS) based on actual reactions (using a scenario technique) rather than using existing items or drawing them from literature. The result is a TA

scale consisting of emotional, cognitive, and desire for change (related to action) TA. An example of an emotional, cognitive, and change items are, respectively: (1) "When a situation is unclear, it makes me feel angry," (2) "I like to know exactly what I'm going to do next," and (3) "I think you have to be flexible to work effectively." An example of possible future studies are relations of emotional, cognitive, and action TA and different domains of creativity. Does the Nobel Prize laureate Bob Dylan (2016) have high levels of all aspects of TA? His music integrates emotions, philosophy in his literature, and action as during musical performance.

It could be that there are individual but also societal differences in emotional, cognitive, and action-oriented TA. Societal values are also related to how individuals think, act, and feel (Hofstede 1984). Could entrepreneurial performance be even more related to action-oriented TA (Teoh and Foo 1997)? Are low levels of UA (or high TA) found in the USA related to action-oriented and cognitive TA, but less to emotional TA? And inversely, does French society, found to score high on UA (low on TA), score higher on emotional TA (Minkov and Hofstede 2014)? Future research could explore these questions.

There are other aspects which can be distinguished concerning TA measurement tools. For example, according to Norton, intolerance of ambiguity is something that "manifests in situations," whereas for others it is a "general feeling" (Stoycheva 2003). For Norton, TA is "a tendency to perceive, or interpret information marked by vague, incomplete, fragmented, multiple, probable, unstructured, uncertain, inconsistent, contrary, contradictory, or unclear meanings as actual or potential sources of psychological discomfort or threat." (Norton 1975, p. 608). His MAT-50 questionnaire consists of 50 items drawn from literature and had a high internal reliability score (0.89). The eight domains were (1) philosophy, (2) interpersonal communication, (3) public image, (4) habits, (5) relation to work, (6) solving problems, (7) the social domain, and (8) artistic domain. An example of an item is: "I seem to enjoy parties most when I know most of the people there."

An example of a survey for children is the ambiguity tolerance scale from Stoycheva (2003). This original measurement consists of 14 items, half for intolerance and half for tolerance of ambiguity for children from 12 to 19 years old, which correlates well with Norton's scale. The items consist of very general feelings of ambiguity, for example, as in this item concerning intolerance of ambiguity: "You prefer the well-known certain things." Stoycheva's definition of TA is "To accept feelings of anxiety and psychological discomfort naturally provoked by ambiguity associated with new, difficult situations."

Next to self-report surveys, there are also assessment tools which focus on the *perception* of ambiguity, or ambiguity related to concrete stimuli. It is thought that mental imagery and saliency is required for the disambiguation of stimuli (Hodgson 2013; Slotnick et al. 2005). Another theory is based on the feature integration theory (Treisman 1998; Treisman and Gelade 1980). The visual system initially decomposes the visual world into maps of simple features such as color, orientation, and direction of motion. Through selective attention the visual system resolves ambiguities in neural coding that arises when multiple stimuli are processed simultaneously. This is the "Ambiguity Resolution Theory" (Luck et al. 1997). It concerns the visual system's physiology and anatomy.

Language use is also related to TA, which is seldom analyzed within a sociocultural approach. The linguist House (2006) conducted a number of studies on differences in communication styles of the German and English languages. She found that in German, explicit language is more used and related this to the cultural dimension of uncertainty avoidance. Another possible indicator of TA to explore could be language use related to time perspectives. Rokeach (1960) mentioned that humans can have a *broad or narrow time perspective* (overemphasizing or fixated on the past, or the present, or the future), which is related to resistance to change and anxiety, and dogmatic and rigid thinking. His studies showed that students with a narrow time perspective and rigid thinking favored the future tense in their stories and ended stories with a line projecting to the future.

Individuals with a narrow time perspective project into the future the outcome of events taking place in the present. Students with broad time perspectives did not write a last sentence to project into the future, but left stories open ended.

Concerning *behaviors*, apart from those already known (for an overview see De Vries 2018), an alternative approach to study TA could be through *embodied cognition*. Cognitions and physical movement are thought to be related, and over time shape pathways in the brain (e.g., Shapiro 2007; Glenberg and Kaschak 2002). Inhelder and Piaget (1964) believed that children first develop feelings of ambiguity at around 1 year of age, when they learn to walk. A (creative) cognitive process of Janusian thinking, related to TA, might also originate from around this moment in development (De Vries 2018).

Other cognitive processes during development could be explored in relation with TA. A study with children showed that having an immigrant background was related to producing ideas which were more “static” than containing processes (De Vries 2018). To describe a process, a “*hind-sight– foresight*” cognition is needed. Children were at the concrete cognitive developmental phase according to Piaget (1967) and therefore this indicates a possible relation with the “inversion reversibility operational system.” It is not known if training forward and backward thinking (as rewinding a movie) could enhance this cognition as well as heighten levels of TA.

Finally, uncertainty tolerance is recently also investigated using *neural and psychophysiological* correlates (for an overview see Tanovic et al. 2018). The heightened reactivity to uncertainty in intolerance of uncertainty is reflected in greater activity in the amygdala and anterior insula as well as startle and skin conductance responding.

The possibilities described above to measure TA are not exhaustive. So far research has found multiple dimensions, cultural differences, and a distinction between “cognitive,” “emotional,” and “action or change” related aspects of TA, and aspects according to abstract (general feelings), more process-oriented (as in situations), or concrete mechanical explanations (neural correlates). Instead of investigating TA itself, more can be

explored through correlation with other concepts, described in the next paragraph.

Related Concepts

On an individual level, there are relations with, but also distinctions from other psychological concepts, and research is ongoing. For example, concerning personality traits and intelligence, findings are contradictory. Berenbaum et al. (2008) found positive correlations with neuroticism and negative correlations with extraversion using the ten-item scale of the International Personality Item Pool. Berenbaum et al. (2006) found positive correlations with neuroticism and negative correlations with extraversion.

Using the Big Five Inventory-2 (Soto and John 2017) and an English-speaking sample ($n = 327$), Jach and Smillie (2019), however, find only partial correlations of TA and subfacets of “openness to experience.” They consist of subscales of intellectual curiosity, aesthetic sensitivity, and creative imagination. They also investigated the mediating effect of intelligence, measured with the International Cognitive Ability Resource (Condon and Revelle 2014). Regression analysis showed that openness to experience as well as extraversion significantly predicted TA, but not intelligence. The strongest connection was between the intellect aspect of openness to experience; the other subdomains were only related via intelligence.

Other researchers investigated boundaries of concepts close to TA. Mussel (2010), for example, studied how “epistemic curiosity” (e.g., Berlyne 1954) is related to other constructs, which were the “curiosity and exploration inventory” (Kashdan et al. 2004) “need for cognition” (Cacioppo and Petty 1982), “openness for ideas” (Costa Jr. and McCrae 1992), and “typical intellectual engagement” (Goff and Ackerman 1992). He concluded that there is no discriminant validity between a number of other constructs, and that these constructs highlight rather different aspects of the same construct, as 49–59% of the variance was shared.

Neighboring concepts of TA are: “need for structure” (Neuberg and Newsom 1993), “need

for precision” (Viswanathan 1997), and “need for evaluation” (Jarvis and Petty 1996). Often used in research in Eastern cultures, and cross-cultural research, is the related concept of “dialectical” and “paradoxical” thinking (Paletz et al. 2015).

Yet another example is the “need for closure,” studied in relation with TA (Berenbaum et al. 2008). It relates to a desire for definite, unambiguous, and certain knowledge, through “freezing” information too early, instead of questioning it (Kruglanski and Webster 1996).

Although it is generally found that TA is related to anxiety, some studies find only partial correlations (e.g., Berenbaum et al. 2008). Measured with the “Worry Domains Questionnaire” (WDQ) (Tallis et al. 1992) and the Intolerance of Uncertainty scale (IUS) (Buhr and Dugas 2006), these researchers found a correlation with all facets of TA, except for the subscale of “inflexible uncertainty beliefs.”

On the level of societies, UA is sometimes related to the distinction of “tight” and “loose” societies (Gelfand et al. 2011). Both concepts relate to a higher or lower need for written and unwritten rules, a need for predictability and structure, and resistance to change. Results of Gelfand’s findings, however, are opposite to UA results. This could be because Gelfand’s measure was based on national auto-stereotypes: Respondents in 33 nations were asked not to report their own values, beliefs, or emotions but to express their ideal for society. Someone can hold a negative stereotype, precisely because it is important to them personally. Also, Gelfand’s classification might be applicable to the organizational level instead of the societal level, but Hofstede’s UA also needs further validation to apply it to a society’s level, as there is not complete independence with the other cultural dimensions (Minkov and Hofstede 2014).

More issues could be discovered by applying TA to different domains. Referring back to Rumi’s elephant it is, for example, possible to ask if animals can display higher or lower levels of TA. Kaufman and Kaufman (2015) described creativity of animals, known to be related to TA. Are dogs more authoritarian than cats, do they have lower levels of TA? The next section

elaborates on human TA in the domain of creativity.

TA and Creativity

TA is currently widely applied in many domains, such as business, medical, and educational environments (for an overview see Furnham and Marks 2013).

A particularly interesting domain is creativity, because along with the personality trait “openness to experience,” TA is generally found to be a main predictor of creative performance (Tegano 1990; Furnham and Avison 1997; Comadena 1984; Sternberg and Lubart 1995; Stoycheva 2003, 2010; Zenasni et al. 2008, Kornilova and Kornilov 2010; De Vries 2018). Stein (1953), one of the first to theoretically relate TA to creativity, defined it as the individual being capable of “existing amidst a state of affairs in which he (or she) does not comprehend all that is going on but continues to effect resolution.”

Research is relatively sparse in this domain (Merrottsy 2020), and therefore there are many new possibilities. For example, it could be interesting to investigate creativity and TA levels of artists in high UA (=low TA) societies. The indigenous Australian aboriginal culture is thought to have one of the highest UA levels (Hofstede et al. 2005). Their art productions, “Jukurrpa,” seem to integrate both extreme high as well as extreme low levels of TA. On the one hand the representations are related to the “dream time,” or creation of the world, which transcends time, space, and reality, related to high TA. On the other hand, there are very strict rules for the artists, who each have a specific role in painting and color use from which they cannot deviate, as the dot-like paintings represent storytelling for land use and survival, related to low TA (Caruana and Caruana 2003).

Another topic could be the relation between TA and aesthetics. During World War II “ambiguous” arts of expressionists like Picasso were regarded as “degenerated” (*Entartete Kunst*) and forbidden (Steinkamp 2012). Ambiguousness was defined by, for example, not using colors

“correctly,” which had to be realistic, or when shapes and forms were contorted or abstract (e.g., unrealistic rectangulars), or when art was critical. Is there a relation with the TA level of the dictator himself as an aspiring artist of mainly realistic water color paintings?

A study with children on the relation of an artist’s own level of TA, ambiguity, and creative productions (De Vries 2018) revealed a relation between the level of TA of a person and features of creative productions. It appeared that individuals with lower levels of TA produced more ideas based on observable (surface) features. Individuals with higher levels of TA produced more abstract (core) ideas, or ideas containing a dynamic (process). Ideas consisting of “process” and “core” ideas were more original, thus more creative.

Moreover, there appeared to be cultural differences between children from different cultural contexts. As early as 9 and 10 years old, children in India, Russia, and Europe developed higher or lower levels of creativity according to these features. In India, for example, children produced more ideas based on observable features, compared to children in Europe where children produced more abstract and process ideas. In Russia children produced ideas consisting of all three features, which represented a high level of creativity.

These findings lead to the developmental “Cultural Actuation Model” (CAM) (Fig. 1, De Vries 2018, also see de Vries 2021 (supplementary material)). This model relates values of cultural contexts or environments, and the fostering of the development of specific kinds of creativity related to originality and fluency. It is in line with Frenkel-Brunswik’s theory on TA and uses the cultural value dimension of power distance (PD) (Hofstede 2011) because this dimension is related to hierarchy. There are cultural differences in authoritarianism of parental and teaching styles based on this dimension. Depending on the high, medium, and low levels of TA and PD, children develop creative potential marked by more or less fluency and higher or lower originality.

Thus, contexts and environments related to cultural values are conducive to different kinds

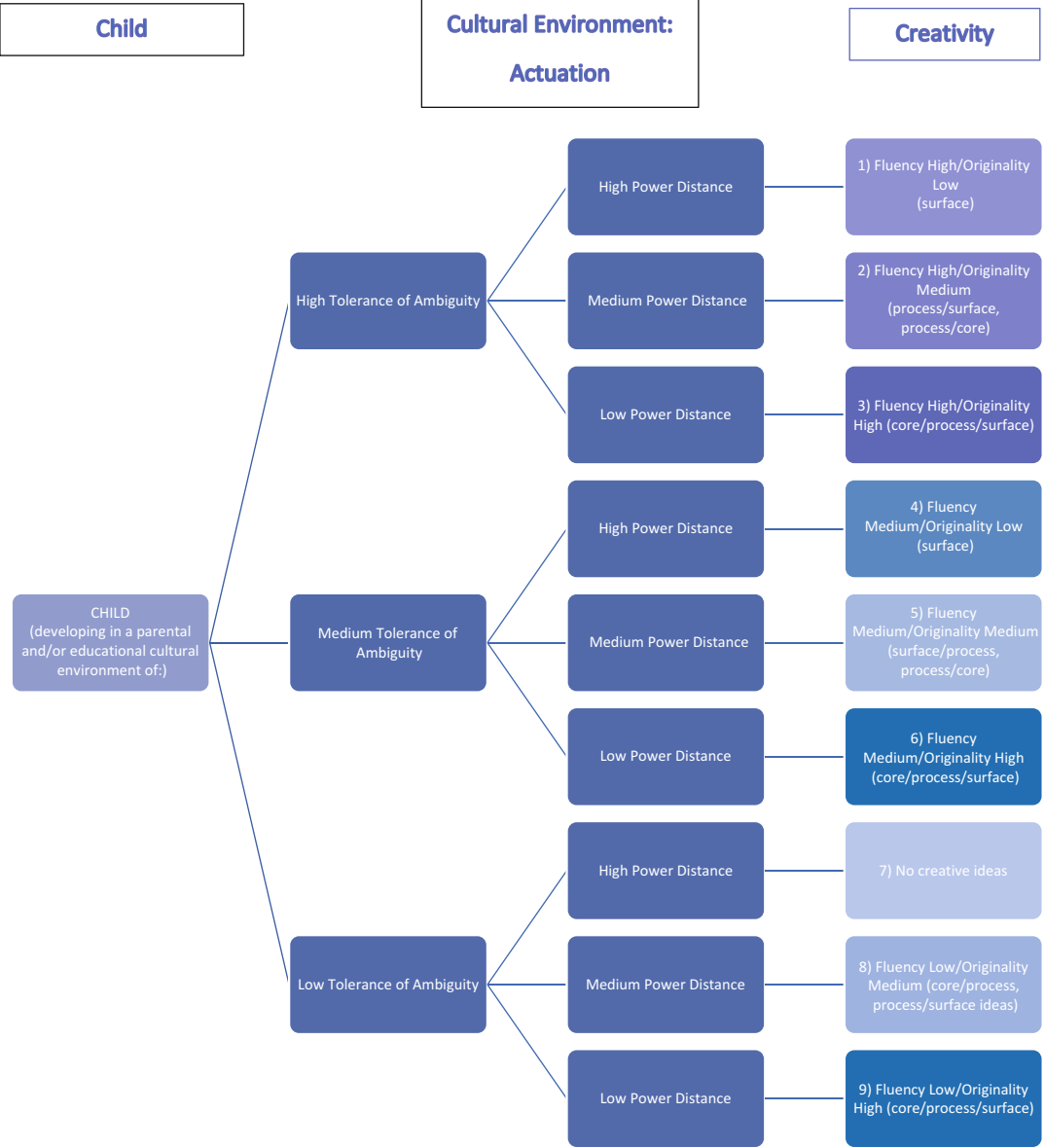
of creativity. A recent and similar model to the empirical research-based “Cultural Actuation Model” (De Vries 2018) is a theoretical model of constructs mapped on the “Space-Time Continuum” (Corazza and Lubart 2021), to investigate differences between intelligence and creativity. It will be interesting to discover more about the intricate relation between these two concepts because when TA is low children are not creative, but also, according to Frenkel-Brunswik think “unintelligibly.” It might be that in an extreme environment where time and space are tight, an individual (as opposed to a group) would need an extreme high level of TA to let go of any cultural limiting beliefs in order to survive.

A possible theoretical broadening could be imagined by integrating the concept of TA. For example, the “Space-Time continuum” describes “episodes” of creativity, suggesting there are moments of creativity. However, considering the emergent aspect of the concept of TA, the physical analogy with a “Wave Model” would become appropriate, graphically represented as a “waffle shape.” Creativity in this sense would be ever unfolding, and rises to the “surface,” where it becomes observable during “episodes.” Different kinds and contexts of creativity could then be related to certain frequencies and wavelengths, which are related to speed, and amplitudes related to originality. Furthermore, waves can collide, and the sum of waves could lead to constructive interference, or eminent creativity. Standing waves could be related to creative “flow” (Csikszentmihalyi 1997).

This example of applying TA to the domain of creativity indicates that future research in any imaginable domain or universe might lead to insights within these domains, while at the same time revealing new aspects of TA.

Researchers’ Bias

As mentioned in the beginning the concept of TA could be related to the level of TA of scientists themselves. This also implies the construction of measurement tools. From the study of TA in the domain of creativity, the cultural distinction of abstractness and concreteness appeared. Relating this distinction to existing measurement tools, it



Tolerance of Ambiguity, Fig. 1 “Cultural Actuation Model of Creativity” (De Vries 2018). Creative ideas can consist of one or more features: core, process, and surface features. Ideas containing process and core features are highly creative, whereas surface ideas are less creative.

A child can be raised in a high, medium, or low Tolerance of Ambiguity (TA) and Power Distance (hierarchical) environment. Children develop the highest fluency and originality in low PD and high TA environments (De Vries 2018).

could be that certain researchers focus more on TA items which are concrete, and others more on abstract aspects.

For example, Stoycheva’s PTATS measurement tool consists of very general, abstract, items. Norton’s MAT scale addresses dynamics

in situations, and related measures, such as “need for closure,” focus on concrete items to measure. There might be a cultural bias as to how to measure TA and this might explain part of the found weak psychometric properties, mentioned earlier, as well.

Minkov and Hofstede (2014) noticed that the concepts risk, fear, and anxiety, are sometimes used interchangeably. They remarked: *“However, risk is to uncertainty what fear is to anxiety: risk and fear relate to known acts and objects, whereas uncertainty and anxiety relate to the unknown; they are diffuse feelings”* (p. 164). Fear and risk relate to concrete “surface” terms, whereas uncertainty and anxiety represent abstract “core” feelings.

Furthermore, Heisenberg’s “Uncertainty Principle” states that the more is known of one property, the less precise another property will be. The principle is related to the paradigm that reality consists of probabilities and possibilities (as in quantum mechanics). A few centuries earlier, philosophers called possibilities uncertainties. Heisenberg could also have chosen to call his discovery the “Possibilities Principle.” Could his choice be related to his own lower TA level, a “need for precision,” or again a reflection of his cultural background? The TA concept should probably be expanded to “Tolerance of Ambiguities, Uncertainties and Possibilities” (TAUP), because it encompasses all these aspects.

Early on Heisenberg had the profound insight that concepts are related to personal predispositions and are culturally determined. Researchers should keep following Heisenberg’s vision, and reinterpret, transform, and synthesize concepts through intercultural collaborations. When discovering new aspects of TA, future researchers should address their own possible cultural biases in TA measurement.

Summary

The concept of TA originates from philosophy, and World War II spurred the development as a psychological construct. It is mainly applied in domains such as management, the medical environment, and creativity.

Research is conducted on various levels, such as the individual and cultural levels. Concerning the related cultural value dimension of uncertainty avoidance there is a validity problem to be solved. Construction of measurement tools based on

philosophy (Budner), or on actual reactions (Greco and Roger), reveal a possible distinction between cognitive TA, emotional TA, and action-oriented TA. Norton (2005) found cultural differences according to samples, which also needs further investigation.

The relatively little research on TA during the last decades offers possibilities to explore the concept further. Mostly researched as a cognitive variable, it should also be related to other psychological aspects such as Dabrowski’s over-excitabilities or the “Dark triad” of personality traits.

According to Frenkel-Brunswik (1949), parental rules and regulations, impinging from the outside, results in children’s naturally ambiguous emotions becoming rigid and thinking “unintelligibly.” Parental rules vary culturally, possibly causing gaps of knowledge in certain domains. Heisenberg theorized that gaps of knowledge are determined by what is abstract and concrete, which varies according to different cultures.

The developmental “Cultural Actuation Model” of creativity, in line with these theories, found that children at the ages of 9 and 10 refer more or less to abstract or concrete aspects of creative productions, and also differ in referring to processes (related to change). These differences are related to higher and lower levels of creative potential.

Overall, social environmental pressure results in determining what a society defines as “abstract” or “visible,” what can be perceived or not and relate to what is considered abstract or concrete. As a consequence, researchers who inevitably (and hopefully) are raised in a particular culture will also be influenced by the abstractness they have learned (or not), when constructing measurement tools.

The analogy with Rumi’s concrete “elephant” metaphor for the TA concept at the beginning of this chapter should perhaps be replaced not by the static “tip of the iceberg” metaphor, but rather a dynamic “top of the wave.”

The emergent property of creativity is reflected in the TA attitude of individuals, and researchers with a high level of TA interested in this topic

would, while embracing reality, stay curious towards infinite future possibilities. Could “riding the wave” be the best analogy for this fascinating concept?

Cross-References

- [Creative Mindsets](#)
- [Creativity](#)
- [Curiosity](#)
- [Emergence](#)
- [Uncertainty](#)

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Transdisciplinarity

Bem Le Hunte

TD School, University of Technology Sydney,
Sydney, NSW, Australia

Abstract

Transdisciplinarity is a practice that transcends disciplines and fields, extending the notion of what is known and knowable and what is possible to discover and create across, between, and beyond all our disciplines. As such, it is a practice that takes place in the emergent spaces between disciplines, which some writers believe is the future of discovery (Johansson F, The Medici effect. Harvard Business School Press, 2004). It is being hailed as a new way to tackle our most complex, networked challenges, yet it is also one of the most ancient ways of seeing the world as a connected whole, as evidenced by Indigenous cultures that do not separate their ethics from their geography, or their religion from their science (Yunkaporta T, Sand talk, how indigenous thinking can save the world. Text, Melbourne, 2019). It excludes no discipline, field, stakeholder, or country and is therefore described as an attempt at a unified field of knowledge – an inherently spiritual notion for some (Nuñez MC, Transdisciplinary Journal of Engineering & Science 2, 2011): “The keystone of transdisciplinarity is the semantic and practical unification of the meanings that traverse and lie beyond different disciplines” (Nicolescu B, Manifesto of Transdisciplinarity. Suny Press, 2002).

Keywords

Transdisciplinarity · Creativity · Complexity · Education · Transformation · Perspectives

It is proposed that transdisciplinarity is a discipline (Rigolot 2020) and yet by definition it must transcend all disciplines: (“trans” means beyond

or across). It empowers the student, researcher, or creator to consider the oceanic nature of knowledge and multiple perspectives, while making connections between knowledges to create new knowledge. In other words: “It occasions the emergence of new data and new interactions from out of the encounter between disciplines” (Nicolescu 2002). The researcher or learner cannot possibly comprehend the entire ocean of knowledge, and “an integrating synthesis is not achieved through the accumulation of different brains. It must occur inside each of the brains,” making it inherently transformative for individual participants. Knowledge, therefore, does not just exist *out there*, independent of the researcher. There are multiple knowledges, but only one “knower” whose role it is to integrate. The knower as “sense-maker” is integral to transdisciplinary practice, especially with complex, open-ended problems where there are no single, simple solutions. Sensemaking is a process that must be continuous and open to the past as well as future challenges (Weick 1995), and the sensemaker has to choose lenses or “frames” with which to see complex challenges, as well as re-framing the challenge(s) through a different disciplinary lens for greater insight (Dorst 2015). This re-framing serves to make the commonplace approach of a familiar method or discipline uncommon. Familiarity and over-reliance on a particular set of tools can reproduce more obvious solutions, and so an exploratory approach to mixing and mashing and inventing methods is often a more suitable means of transdisciplinary discovery than prescribed, formulaic, or template-driven approaches – a more abundant way to access the realms of the possible (Le Hunte 2020).

Problems with Disciplinarity

In some ways, transdisciplinarity is a reaction against a singular disciplinary approach to knowledge, which conjures up a rigid view of the world according to preconceived rules and truths, which are often culturally specific. While the word “discipline” is associated with study, “in fact the earliest known use of *discipline* appears to be

punishment-related; it was first used in the 13th century to refer to chastisement of a religious nature, such as self-flagellation” (Merriam-Webster.com 2021). The power of a discipline to punish students (with low marks) or reward (with high marks) is just one way that our disciplines continue to exert power over us. According to Foucault (2007), “there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations.” So, understanding how we are “disciplined” may be something of a precursor to transdisciplinary work and the start of the critical thinking it entails – sometimes described as “learning to know,” which refers to continuous questioning of assumptions leading to continually “connected beings” (McGregor 2004).

If transdisciplinarity refers to an oceanic field of all knowledges existing together – diversity and unity combined – then the idea that this ocean can be divided up into disciplines may seem absurd to some. Louis Borges wrote *The Book of Imaginary Beings* where he attempted to create a fictional, novel taxonomy of life, dividing up the entirety of all creatures into bizarre categories such as “embalmed ones,” “those that belong to the Emperor,” “mermaids,” “those that tremble as if they were mad,” “those that from a long way off look like flies”. (Borges 2002). For some thinkers, this type of arbitrary fragmentation of the world simply reflects modern thought, which is accomplished at creating order “to tame the wild profusion of existing things” – and Borges’ fable simply serves to highlight “the exotic charm of another system of thought” as “the limitation of our own” (Foucault 2018). Others write that transdisciplinarity demands a decolonized approach, claiming that western disciplinary knowledge is “fragmented, specialized, linear and scientific” (potentially limiting the realms of the possible), and transdisciplinary knowledge is “one where the metaphysics of western understanding is questioned” (Gibbs 2018).

Transdisciplinarity is often confused with cross/multidisciplinarity where disciplines are combined and juxtaposed, but without a coherent

attempt to include and expand all disciplines. “From this stance, a root discipline (e.g., economics) may turn to several other disciplines to help it solve a problem...the intent is to serve the root discipline that initiated the collaboration” (McGregor 2004). It is also confused with interdisciplinarity, where different disciplines are assembled together, but “the people involved offer parallel analyses of parts of a problem” (McGregor 2004). In transdisciplinarity, many perspectives on issues are sought (from the disciplines and beyond) and the questions and issues themselves are re-framed as the disciplines re-align and negotiate how to serve a bigger cause. All of these approaches to knowledge explore different realms of the possible, each approach presupposing differences in intentionality, agency, and cooperation. Lattanzi, writing for UNESCO, uses the metaphor of a banquet to outline the differences: multidisciplinary is a banquet where everyone brings a dish. With interdisciplinarity, people might bring a dish with some sense of purpose (e.g., guacamole to go with beans for a Mexican meal). With transdisciplinarity, it is thought that everyone at the party plans and cooks and takes account of the entire context together.

Nobody can tell to whom the various elements belong and who composed them: the team-work has to be acknowledged. In the transdisciplinary banquet there is an optimal use of resources, as no dish is partially utilized, or just left over. There is an optimal concordance of tastes, as a great amount of time is spent in conceiving the many dishes in advance exactly with a view to their integrated fruition. The team-members acquire new expertise through their interaction. They improve their capacity of listening. They learn that they can produce a successful outcome, although they are not in possession of all the ingredients, neither are they familiar with all the cooking procedures. They understand that, when they are not doing the entire job - their entire job - they are paradoxically, all together, getting the job done. (Lattanzi 1998)

Why Transdisciplinarity Research?

If transdisciplinarity has evolved as an attempt to re-construct the wholeness of knowledge and the

intersection between fields, it has also arisen in response to the growing realization that our problems are more complex and connected than ever before, manifesting in “messy, social and physical contexts” that elude a mono-disciplinary response (Carew and Wickson 2010). These challenges that defy simple approaches are sometimes described as “wicked problems” (Rittel and Webber 1973). And as Einstein purportedly said, no problem can be solved in the context in which it arose. For example, there are potentially multiple contexts for addressing the problem of climate change, from educating girls to improving wellbeing in developing countries to promoting plant-rich diets (Drawdown 2021). Moreover, solving a problem in a single domain will often have unintended consequences in another. And simply by varying disciplinary lenses, wicked problems can be seen from multifarious perspectives. (A global pandemic will be seen differently through the lenses of medicine, business, policy, narrative, law, social sciences, etc., and combining these approaches will more authentically address the complexity of the problem as it arises, not simply as individual fields choose to see them.) Once again, a decolonized perspective on complexity might offer an important perspective – as Núñez (2011) writes: “From a transdisciplinary point of view, complexity is a modern form of the very ancient principle of universal interdependence.”

Quite apart from the global challenges and the importance of tackling them from multiple perspectives, transdisciplinarity serves the double function of opening up opportunities for research that are yet to be unveiled, as described below:

There are more questions to explore than ever before...so, for instance, you will find engineers collaborating with biologists to understand the toughness of the conch shell and applying it to everything from tank armor to auto bodies. Or you will see oceanographers, meteorologists, geologists, physicists, chemists, and biologists collaborating to understand the effects of global warming. New discoveries, world changing discoveries, will come from the intersections of disciplines, not from within them. (Johansson 2004)

How Is Transdisciplinary Research Conducted?

On the simplest, most crucial level, the transdisciplinary approach enables an oceanic vision of the world of knowledge, where no knowledge is out of bounds, and all knowledge exists together. While our Western institutions often limit the realms of what is possible in our discovery processes to only scientific Newtonian/Cartesian perspectives that slice up knowledge into measurable fields of research. Transdisciplinarity welcomes multiple ways of knowing, without necessarily privileging one over the other, expanding ways to access the possible through multidimensional participation in and through knowledge cultures. The disciplinary learner is agnostic, and must enter this liminal space (whereby there is no discipline or field) and they do this with others from different fields, ways of being and ways of knowing, often using multiple methods from across the disciplines.

Carew & Wickson offer a few principles follow that begin to encapsulate transdisciplinary research (Carew and Wickson 2010):

- 1) Firstly, transdisciplinary research involves “transcending and integrating” disciplines. It is not enough to cross boundaries, but the integration of knowledges is integral.
- 2) Methodologies must evolve through “inter-penetration of epistemologies” and “collaborative deconstruction.” Approaches must be reconciled, even though some believe certain disciplinary paths can never cohere.
- 3) There is a practical rather than abstract approach to tackling pressing social issue “within rich, contested real-world contexts”.
- 3) **Participatory**, including diverse stakeholders and those who would benefit from the changes.
- 4) **Innovative and experimental**, allowing ideas to be tested.
- 5) **Dynamic** and open to change in the face of new knowledges, discoveries and contexts (Riedy et al. 2018).

Transdisciplinarity “challenges numerous assumptions about research, including who does the research, where research is conducted, how outputs are valued, and how research is supported.” Moreover, the “relevance of the academic paper for research partners is not always shared,” which means outputs can include everything from policy briefs to documentaries, to comics and other Non-Traditional Research Outputs (NTROs). Breaking with conventions in an attempt to open up the possible can be challenging as well as being liberating. “To invoke Foucault, it is clear that there are systems of discipline and punishment at play when working in undisciplined ways”. Our funding system “favors and supports the hegemony of disciplinary research” and “working across different institutional and disciplinary cultures in university and policy bureaucracies requires structural change” (Patel 2019).

Why Transdisciplinary Learning?

It is suggested that transdisciplinary thinking skills are essential, simply due to the proliferation of disciplines and the inability to be an expert in all of them. “The number of disciplines increased from 7 (when first universities were founded in the 13th century), to more than 8000 in 2012. A great expert in a given discipline is totally ignorant in more than 7999 disciplines” (Nicolescu and Ertas 2008). Moreover, knowledge within those disciplines is more transitional than ever in our networked, rapidly changing world: “our science is a drop, our ignorance a sea” (Kerwin 1993).

While our societies are in rapid transition, it is said that today’s student might navigate up to 17 jobs across 15 fields once graduated (FYA 2017) – sometimes described as “portfolio

Riedy et al. (2018) propose (with some overlap) that there is no consensus even within their institution on what transdisciplinary research entails, but suggest that it should be:

- 1) **Purposive**, tackling a wicked situation and leading to positive change.
- 2) **Holistic**, engaging the “past, present and future of whole systems” while transgressing boundaries with regards to the site of research.

careers". Given that students are more often than not paying increasing fees for this education, there is a need to "future-proof" the preparation of a singular degree and "the ability to teach students to think creatively across disciplines could well become a moral and political imperative. In this context, further exploration of transdisciplinary creative practice is compelling" (Le Hunte 2019).

There is strong support from industry that creative competency in the face of growing complexity is perhaps the most vital skill our leaders can have, and that in-demand skills of the future include those taught in a transdisciplinary curriculum, such as complex problem solving, creative and critical thinking, and other collaborative skills (IBM 2010; World Economic Forum 2020).

Other writers have suggested that our education should prepare students for futures that are "radically unknowable" in the face of today's "supercomplexity," which "produces a multiplication of incompatible differences of interpretation." In this environment, the task of education is ontological (about being) not epistemological (about knowing) and "that the idea of skills, even generic skills, is a cul-de-sac" (Barnett 2012). In this sense, a transdisciplinary education offers "integral education of the human being." It is "an education which is addressed to the open totality of the human being, not to just one of the components" (Nicolescu and Ertas 2008).

Importantly, education is part of a complex system that cannot sit in a separate domain. In order to educate people for the major transitions we are encountering, we need today's learner to understand creative interventions into complex problems, because it is thought that we are stuck in old paradigms with limited, linear, siloed solutions to global challenges. The argument is that with wicked problems, "most actions, if they are eventually taken, tend to focus on back-end, shallow, reactive, short-term, single-factor, heavy-handed, de-contextual initiatives (like pesticides for pests and punishments for misbehavior in schools)" and a transformative, transdisciplinary education has been advocated as a solution (Wright and Hill 2020).

How Is Transdisciplinary Learning Conducted?

Transdisciplinary learning, by nature, requires students to explore a breadth of knowledge rather than the depths of knowledges. It tackles the entire taxonomy of unknowns through multiple lenses and methods. As it is impossible to conduct a transdisciplinary curriculum that addresses knowledge domains at depth, there might be a privileging of a Curriculum for Being rather than a Curriculum for Knowing – a focus on the knower, and how to learn and synthesize and discover, rather than a more content-driven monodisciplinary curriculum (Le Hunte et al. 2021, In press).

As such, it is inherently linked to transformative learning as once learners have had their worldviews expanded, it is hard for them to contract. This, in turn, may lead to "peak transformative experiences," which can entail shifts in worldview, consciousness, and self-awareness, leading to greater openness and inclusion and motivation to take action in the world (Le Hunte et al. 2021, In press). Indeed, transdisciplinarity has been compared to transpersonal psychology, in that the trans personal might be defined as "experiences in which the sense of identity or self extends beyond the individual or personal to encompass wider aspects of humankind, life, psyche or cosmos" (Walsh and Vaughan 1993). In this sense, it aligns well with Nicolescu's Mode 1 of transdisciplinarity as an "inner science." It becomes a "way of being" as it "extends far beyond the scope of research projects (Mode 2) and appears constantly and ubiquitously in real life" (Rigolot 2020).

Transdisciplinary learning is also inherently creative, as learning has to take place in the interstitial, liminal spaces between and beyond disciplines, in novel spaces where emergence and discovery has yet to take place. It challenges the traditional siloed approach to knowledge delivery as well as traditional theories of learning and teaching, such as constructive alignment (Biggs and Tang 2015), which requires the teacher to know in advance what will be learned, and does not hold space for unknown learning outcomes.

Instead, those who teach into transdisciplinary subjects discuss the need to “maintain a sense of wonderment in our teaching and to avoid developing a formula for it, which risks closing off opportunities for emergent outcomes. For staff, this openness can be a perpetual source of inspiration and rejuvenation, as students produce previously unimagined responses to complex challenges” (Kligyte et al. 2019).

As it is impossible to teach in-depth knowledge across every discipline, the focus leans towards creative discovery across, between, and beyond disciplines through in-depth problem-finding, problem definition, and solution-finding using methods from across a wide variety of disciplines as well as practices from industry, government, and community partners. As with transdisciplinary research, there is a focus on complex adaptive systems, systems thinking, and other theories that lend themselves to action, such as ideas for systems thinking, the circular economy (Kneese 1988), doughnut economics (Raworth 2017), etc. While there might be a strong focus on sustainability, these principles can be applied to any range of challenges that are situated in a context that is inherently complex. There might also be a focus on futures thinking, as transdisciplinary learning and research are naturally action-based, with an aim to create preferable futures from the complex “stuck-ness” of present challenges. And as most change-making ideas have an economic/financial co-efficient, there might be an entrepreneurial component to the learning, often with a deep consideration of social impact, unintended consequences, etc. (BCII 2019). All of these can also be seen as “probes” or interventions into complex systems, and some of them become “safe-to-fail” methods for shifting systems in a favorable direction (Snowden and Boone 2007). Needless to say, the above considerations require creative-thinking skills – the ability to think and design experiments, explore the “adjacent possible” (Johnson 2011), observe and understand the full context of a problem or opportunity being explored, and think critically and analytically beyond domains. These skills go well beyond popular, standardized processes such as Design Thinking, which imply the imposition of one

discipline on another – but rather require all the disciplines to work together, equitably. As well as familiarity with the goal of transdisciplinarity, learners are required to go deep into the various practices it includes – as well as values, empathy, and responsibility for the nonhuman world. This type of learning requires radical inclusivity and “presupposes an open-minded rationality” (Nicolescu 2002).

It should be mentioned that transdisciplinary learning does not take place simply in institutions, but often at the porous boundaries between worlds – students, academics, industry, government, and community partners and professional staff – as well as other participants in enquiry and learning well beyond. By including students as partners, without and outside of the traditional hierarchies, involving student voice and student input into and co-design of the curriculum, a kind of “third space” can be created, “enabling new relations and knowledges to emerge.” Transdisciplinary learning enables powerful mutual learning to take place (Polk and Knutsson 2008) in a way that enables further, broader emergence to take place.

Disrupting the way things are always done is a challenge for institutions attempting transdisciplinary learning. “For example, Scholz and Steiner (2015) argue that people who act within a system on a daily basis are experts on the contexts in which they operate. Integrating transdisciplinary... approaches allows us to further question power relationships implicit in traditional educational contexts” (Kligyte et al. 2019).

In spite of the potential of transdisciplinarity to transform society, one of the biggest challenges with learning beyond silos is that the average research and educational institution “favors and supports the hegemony of disciplinary research” according to Patel, writing for the Science Research Council (2019).

Features of a Transdisciplinary Curriculum

Constructing a transdisciplinary curriculum requires a different approach to learning and

teaching, with some of the following principles working together to promote discovery across traditional silos of knowledge (Le Hunte 2019):

- 1) The intentional curation of learning experiences that allow knowledges to combine well beyond the silos in which knowledge currently exists
- 2) The encouragement of creative leaps and connected thinking
- 3) An environment with agnostic (and respectful) attitudes to theories, methods, and practices
- 4) Creative constraints to contain and challenge the creative process (given that transdisciplinary knowledge is oceanic)
- 5) Slow thinking so students have time to “problematize” the fields they are exploring and negotiating and become comfortable with unknowns rather than rushing to obvious answers to complex challenges that have been trialed and failed before
- 6) Teaching students to ask better questions
- 7) The confidence to “not know” and the ability to overcome the “curse of knowledge” (Newton 1991)
- 8) Confident and creative teachers who can walk the talk and co-create a community of mutual learning
- 9) The introduction of creative mindsets and methods that encourage students to become change-makers and rule-breakers

Conclusion

Transdisciplinarity can be seen as a portal into the possible, as it encompasses all disciplines and delivers insight, discovery, and lessons between, beyond, and across all disciplines. Transdisciplinary education and research have some defining features. The practice (and it is very practical) might include:

- An ability to synthesize and discover knowledge(s) between disciplines, fields, industries, and communities with a creative intent and an openness to emergence
- An ability to tackle the real-world complex challenges of our time (with an intention to

move towards a more desirable future state) and to unpack and explore the connectedness of our systems for a better world

- The ability to value a diverse range of knowledge types, knowledge cultures, and ways of knowing, taking an oceanic view of knowledge and self that is holistic and connected to all systems
- An ability to combine knowledges with the lived experiences of diverse stakeholders to create communities of mutual learning

Behind these practices is a philosophical understanding that “fragmented thought” within any researcher or system is unable to create unity at a time when it is desperately needed (Nicolescu and Ertas 2008). And that transdisciplinary learning requires an ontological focus rather than an epistemological focus – a “Curriculum for Being, not just a Curriculum for Knowing.” As such, the transdisciplinary curriculum presents an integral, interconnected, transformative education of the whole being, to create empowered and creative thinkers with a sense of purpose. Ultimately, transdisciplinary learning and research present opportunities to travel between, across, and beyond every domain of knowledge – as well as strengthening an inner knowledge – building ontological capacity to meet the challenges of our time.

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Transformational Creativity

Robert J. Sternberg

Department of Psychology, College of Human Ecology, Cornell University, Ithaca, NY, USA

Abstract

This entry presents the construct of transformational creativity – creativity that makes a positive, meaningful, and potentially enduring difference to the world. People who are transformationally creative seek to make the world a

better place. I first discuss creativity and then positive creativity, reviewing their strengths and drawbacks. Then I discuss three types of transformational creativity – fully transformational creativity, self-transformational creativity, and other-transformational creativity. I further discuss pseudotransformational creativity – creativity that is presented with the pretense of making the world a better place but that really is intended only to enhance the prospects of the creators. There are three types of pseudotransformational creativity – fully pseudotransformational creativity, self-destructive pseudotransformational creativity, and other-destructive pseudotransformational creativity. It has been a mistake, I believe, merely to teach for creativity, because so much of creativity has been put to bad uses. We should instead focus on teaching for the transformational creativity that makes the world better, not worse.

Keywords

Creativity · Transformational creativity · Pseudotransformational creativity · Positive creativity

So often, more is better. We tend to view higher levels of human abilities as a good thing. That is, we view more intelligence, more creativity, more musical talent, and more athletic ability – more of pretty much any ability – as better than less of it. But are these characteristics inherently a good thing? In particular, is more creativity (or intelligence) necessarily or somehow intrinsically a good thing?

On the one hand, having more of a desired characteristic, such as the characteristics above, would seem to be a good thing in that one can make contributions to the world that perhaps one could not make without them. On the other hand, there is no guarantee, or perhaps not even a probability greater than 0.5, that the contribution will be positive. As this entry focuses on creativity, let us use that as an example.

Historically, creativity has been used for some extremely positive ends. Creativity is at least in

part responsible for Beethoven's *Ninth Symphony*, Michelangelo's *David*, Kafka's *The Trial*, Darwin's theory of evolution, the electric razor with which I shaved this morning, the computer I am using to write this entry, and the cell phone by which I stay in touch with my children, which are a handful among the literally countless examples of creativity put to constructive use.

Some would say that creativity is naturally a positive force (e.g., Kaufman and Glaveanu 2021). I used to be one of them. For many years, I wrote about the value of teaching for creativity and teaching students how to think creatively (e.g., Sternberg 2010; Sternberg and Williams 1996). During that time period, I saw creativity, intelligence, and some other characteristics as intrinsic goods. After all, creative people have made the world what it is. What is there to complain about? But that was at a different time of my life and, as it turned out, of history.

Creative people have made the world what it is, but unless one puts on blinders, it is hard to ignore the negatives as well as the positives. Creativity has not only showed what is positively possible, but it also has showed us what is possible that is negative: weapons of mass destruction, machines that belch out carbon dioxide and methane that have produced horrific levels of global climate change; chemicals that have polluted the air and water; fascist and other propaganda; fake news disguised as accurate news that is designed to arouse the worst in people; social media-reinforcing clicks, even when the clicks result in people believing malicious falsehoods or buying harmful products; novel and politically useful means of surveilling, punishing, and assassinating political opponents; and deaths during the times of COVID-19 caused fairly directly by politicians who care more about creative ways to get reelected than about keeping their constituents healthy or even alive. Creativity, then, can be used cynically and destructively as well as it can be used constructively and with hope for a better future. The possibilities for creativity, then, are endless, but in neutral and negative ways as well as positive ways.

One can imagine a mirror that has two sides, one showing the positive sides of creativity, and

the other the negative sides. If one looks only at one side of the mirror, and conveniently has the other side facing a wall, one may see creativity as only positive or as only negative, or at least, as primarily one or the other. Rather, its possibilities are what we make of them. Intrinsically, creativity is neither positive nor negative. We might be tempted to think of creativity as positive – especially for those of us who have invested all or part of a career in conceptualizing, studying, and teaching it. But we do so only by closing our eyes and ears to all the negative uses to which it has been put.

A solution to the problem of the indifference of the construct of creativity to the uses to which it is put has been to distinguish among positive, neutral, and negative creativity (James et al. 1999; James and Taylor 2010; Sternberg 2021a, b, [in press](#); Sternberg and Chowkase 2021; Sternberg and Karami 2021). The idea would be that creative work is novel and useful. Positively creative work, though, is not only novel and useful, but also work that is put to a positive use. In other words, creative work that is negative in its uses or potential uses or even neutral is excluded from the category of positively creative contributions.

As so often happens in psychological research, what seems like a solution at one point in time comes to present the next problem at a later point in time. “Useful” does not always mean broadly positive. As my collaborators and I discussed the concepts of positive, neutral, and negative creativity, we kept running into three nagging problems. First, what is positive in the short run often is negative in the long run, and vice versa. Second, what is positive at one time in history may be negative at another, as the needs of society change over time. Third, what seems positive to some people or in other cultures often seems negative, or neutral at best, to other people or in other cultures. The differences may be cultural, or they may be simply a result of inter-individual differences. But the concept of *positive creativity* turned out to be much more elusive than we had expected it would be. Even within our relatively small and homogeneous research group, we had trouble reaching consensus as to what contributions were what. Many contributions had both positive

and negative aspects. Indeed, many of our examples even of neutral creativity turned out not truly to be neutral, but rather either ones on which people disagreed or ones for which there were both positive and negative aspects, which may or may not have canceled each other out.

Take 1: Positive Creativity

It was at this point that I realized that the construct of *positive creativity*, as we had conceived of it, was fraught with difficulties. Most contributions we came up with just did not neatly fit into any particular category of positive, neutral, or negative. For example, social media have been very positive in many ways, providing opportunities for people to communicate with each other at levels and in ways that never would have been possible before their advent; they also have provided news of importance that people might otherwise never learn about; and they further have provided people with a way to amplify their views and present them to a broad public that formerly would have been inaccessible. And yet, too much of the communication is hostile, aggressive, and even potentially damaging; the news feeds often are biased and sometimes deliberately so; the amplification of views may lead people to do incredibly stupid things, such as refuse to be vaccinated against COVID-19 because they believe the vaccines themselves cause the disease, or cause sterility, or contain microchips that are then permanently implanted in people’s brains. In our initial analysis, social media came out as an example of “neutral creativity,” but in a way that would be totally different from the neutral creativity of a novel and only slightly compelling design for a bowtie just brought to market.

Take 2: Transformational Creativity

Having seen that the concept of positive creativity was not accomplishing the purpose various creativity theorists and researchers had hoped it would serve, I introduced a different concept, transformational creativity, which derived from work

done on transformational leadership (Bass 1998; Bass et al. 1996; Bass and Riggio 2006) and later work done on transformational giftedness (Sternberg 2020a, b, 2021c; Sternberg et al. 2021).

Transformational creativity is defined as creativity that is deployed to make a positive, meaningful, and potentially enduring difference to the world (Sternberg 2021c) – to achieve a collective common good. Transformational creativity can be contrasted with transactional creativity, which is creativity deployed in search of a reward, whether externally or internally generated (Sternberg 2021c). The focus in the present essay is on transformational creativity and its various types. It is worth noting, however, that transformationally creative people may also be transactionally creative. That is, to accomplish their goals, they need to know how to “work the system.” But they differ from merely transactionally creative people in that their end goal is to effect positive transformation for the world, at some level. They may pick up salary, prizes, and various kinds of accolades along the way, but their ultimate goal is to improve the world. Note that not all transformationally creative attempts succeed as planned. Many drugs that have been introduced to improve people’s lives backfired, such as Thalidomide as a way of mitigating symptoms of morning sickness. The drug ended up causing massive birth defects.

Some transformationally creative individuals pay very high prices for their efforts. Malala Yousafzai was shot in the head. Socrates’ creative ideas led to his drinking poison because some of the more powerful citizens of Athens did not appreciate his work. Hungarian physician Ignaz Semmelweis proposed that physicians wash their hands in-between patients. He was mocked by most of his fellow physicians and suffered a nervous breakdown, ending in his being placed in an asylum, where he was beaten and ultimately died. Of course, there are also those who are amply rewarded during their lifetimes – Louis Pasteur, Albert Einstein, and even Nelson Mandela after years of hardship.

Transformational creativity can be of several different types. The two major types are genuine transformational creativity and pseudotransformational creativity. Transformational creativity

changes the world, at some level, for the better; pseudotransformational creativity is a pretense of changing the world for the better. There are three subtypes within each type.

An important question is whether what matters is the intention or the outcome. Whether something is transformational is determined by the outcome. But it is hard, although not at all impossible, to achieve the result unless one works toward it. The start is at least to try rather than to decide in advance that genuine transformation is a goal one cannot possibly achieve.

Genuine Transformational Creativity

Fully Transformational Creativity

The ideal type of transformational creativity, at least from the standpoint of the positivity and generality of its consequences, is *fully transformational creativity*. In this type of creativity, the creative individual seeks to benefit others as well as themselves through the application of their creativity. Often, they need to transform their own life before they transform the lives of others. Fully transformationally creative people discover fulfillment in their lives by changing other people’s lives. Often, they change their own lives as result of what they do for others. For example, Greta Thunberg will live knowing that her efforts at promoting climate change, whether or not they fully succeed, will have made a difference to the lives of young people like herself who previously felt unheard.

Self-Transformational Creativity

A second type of transformational creativity is *self-transformational creativity*. In self-transformational creativity, one uses creativity to improve, enhance, and enrich one’s own life. But the creativity one uses for one’s own life is not necessarily applied to anyone else’s life. One may have a hobby through which one tries to fulfill oneself and become the person one wishes to be – playing music, doing martial arts, painting, writing fiction, or whatever. In many cases, and especially for retired people who take up or return to a hobby, the goal is not to change the world for others, but rather, to change the world for oneself –

to find the kind of personal fulfillment and self-actualization (Maslow 1998) that may not be, and perhaps never has been, available through one's work or even one's interpersonal relations. Others may use religious practice for a similar purpose – to help them achieve spiritual fulfillment. However one does it, achieving self-actualization involves self-transformation but not necessarily transformation of anyone else.

Other-Transformational Creativity

A third type of creativity is *other-transformational creativity*. In this type, one transforms the lives of others, but not necessarily of oneself. Immigrant families sometimes come to a new country, for example, under challenging circumstances. The parents may have been professionals in their original country but find themselves in low-paying, working-class jobs in the new country – perhaps as taxi drivers or house-cleaners or operating the cash register in a convenience store. They realize they most likely have lost the opportunity for serious self-actualization in their own lives, but they devote themselves to creating for their children an environment that will enable their children to fulfill the children's dreams – and the parents' dreams for the children. Sometimes, the motives for other-actualization but not self-actualization are different. It can be a result of poor mental health. Some great writers, for example, such as Virginia Woolf, Ernest Hemingway, David Foster Wallace, Anne Sexton, and Hunter Thompson, contributed to others through their wonderful writings but then ended up taking their own lives before their natural time had come. Both Mahatma Gandhi and Nelson Mandela themselves led very challenging and challenged lives but contributed enormously to others. They transformed the lives of others but were less successful in transforming their own personal lives.

Pseudotransformational Creativity

Pseudotransformational creativity is creativity that is based on pretense. The creativity is presented as improving the world but makes the world worse. The creativity is actually for the selfish benefit of the person exhibiting it, and

perhaps their family, friends, and associates. This kind of creativity is regularly found in the political arena, certainly today in 2022. Pseudo-transformational creativity differs from self-transformational creativity in that the former is based on the pretense of helping others and is always deceptive at someone else's expense; self-transformational creativity is to make one a better, more self-actualized person and does not involve deception of others.

Fully Destructive Pseudotransformational Creativity

Fully destructive pseudotransformational creativity is the kind of creativity that is destructive of oneself and of others. It is the creativity of some modern dictators who, whatever their short-term gains, will be remembered in history as having sacrificed the well-being of the people they lead for their own ambitions, and for having harmed or destroyed the lives of their followers and opponents alike. Xi in China will be remembered for having installed in China a 1984-like surveillance state, complete with concentration camps and mind control, that deprived millions of Chinese of anything resembling freedom of thought and action. Vladimir Putin in Russia will be remembered for what – invasions of neighbors? Novel assassinations and assassination attempts? Reinstalling in Russia the corrupt autocracy that some had hoped would go away with the end of Communist rule? Would-be dictators such as Trump in the United States or Bolsonaro in Brazil will be remembered for what – their narcissistic attempts to retain power, even at the cost of the countries they have led? In each case, their gain is through deception and at the expense of those for whom they are supposed to be responsible.

A serious problem with fully pseudo-transformational creativity is that the purveyors of it tend to be both charismatic and narcissistic, and such toxic leaders are appealing (Lipman-Blumen 2006), as they always have been, to uneducated people who are taken in by appeals to their victimhood, and to colluders who see a chance in followership of these leaders for personal gain at other people's expense. Thus, toxic

leaders often do not always have to force themselves on others; they may well be chosen by those ready to be taken in by toxic appeals.

Self-Destructive Pseudotransformational Creativity

Self-destructive pseudotransformationally creative people do themselves in by their own creativity. They may be terrorists, insurrectionists such as at the US Capitol building on January 6, 2021, or users of social media who are self-destructive in their attempts to destroy others. In a sense, they call to mind Sigmund Freud's concept of Thanatos – of the forces within all of us that lead to our own destruction. They are likely to be people who would like to harm others but are too inept or too focused on themselves ever to get the chance.

Other-Destructive Pseudotransformational Creativity

Other-destructive pseudotransformational creativity is aimed solely at others and spares the purveyor of the destructive creativity. Internet swindlers, spammers, poison-pen social-media contributors, and propagandists often attempt to change things in a way that will be harmful to others but that will spare them. At the time I am writing, they are often succeeding, at least in the short-term. The policing capabilities of the Internet, of social media in particular, and of other aspects of modern life are so behind the capabilities of malefactors that it is hardly a contest.

Conclusion

Educational systems often ignore creativity or may actively discourage it. Multiple-choice tests, for example, which are so common in the United States and many other countries, are poor instruments for measuring or encouraging creativity. But creativity, in itself, is as likely to be used for ill as for good. The concept of positive creativity was introduced to help steer things toward positive ends. But a limitation of this construct is that what is positive – or useful in a positive way – for one individual or group may

be negative for another individual or group. For example, Republicans and Democrats in the early years of the third decade of the twenty-first century in the United States seem to have very different ideas about what is positive and what is negative creativity. A 2021 law passed in Texas that has seemed to bypass federal abortion statutes was creative – in assigning responsibility for enforcement to vigilantes – but whether that is positive or negative depends on one's point of view. Transformational creativity is creativity that makes the world a better place. It should transcend special-interest groups. It should generalize to broader issues. If the Texas law, for example, encourages vigilante justice and spying on neighbors, is that what people want for other aspects of society? Do they want to become a modern-day post-World-War II East Germany? Or a modern-day China? Will we have vigilante justice for perceived political transgressions as well? How about ones that any particular group sees as matters of morality, such as sex before marriage? Is the "possible" of the future a surveillance state with a top court representing a political party and masquerading as meting out impartial justice? Is it a political party that takes over by minority rule?

We should develop fully transformational creativity in youngsters. The matter is not a trivial or even a small one. In contemporary society, much of creativity, although certainly not all, is being used for bad ends. More creativity may be better, or it may not be. Idealism about the concept of creativity will not stop the road toward the possibility of a dystopian future. Transformational creativity might.

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Transformative Cognition

Andrea Gaggioli

Department of Psychology, Università Cattolica del Sacro Cuore, Milan, Italy

Applied Technology for Neuro-Psychology Lab, I.R.C.C.S. Istituto Auxologico Italiano, Milan, Italy

Abstract

Personal change is generally considered as a gradual and linear process, which occurs either as a result of maturation over the lifespan or as the result of a therapeutic interventions. However, research from different disciplines – including anthropology, philosophy and psychology – suggests the existence of a second type of change – transformative or transformational – which involves a radical and long-lasting shift in the individual's core beliefs, values, and attitudes. In this contribution, I will review key definitions and conceptualizations of transformative experience, discuss the scientific and practical relevance of this construct, and suggest some future directions for research.

Keywords

Personal change · Transformation · Transformative change · Cognition

Introduction

The famous short novel by Charles Dickens, *A Christmas Carol*, tells the story of Ebenezer Scrooge, a greedy, cold-hearted, and selfish usurer in the City of London who disparages charity and suggests that the poor should die. On Christmas night, he meets three ghosts: the spirit of the Christmas Past, the spirit of the Christmas Present, and the spirit of the Christmas Yet to Come. The three ghosts will retrace Scrooge's existence, showing the misery of his present and what will happen in the future (he has died, and no one misses him) if he does nothing to change. After these encounters, Scrooge wakes up on

Christmas' Day with a new outlook on life, grateful for being given a second chance.

As noted by Miller and C'de Baca (2001) in their seminal book, *Quantum Change: When Epiphanies and Sudden Insights Transform Ordinary Lives*, Scrooge's life-changing encounter is a prominent example of a transformative (or transformational) change: an experience that generates a profound and enduring alteration in a person's beliefs, values, assumptions, and preconceptions, leading to the construction of new meaning in life. Anecdotal accounts of transformative change are found in a number of historical biographies and in the popular culture, which abounds with tales of heroic transformation that are transmitted to countless generations throughout the ages (Allison et al. 2019).

Surprisingly, despite its cultural relevance, the phenomenon of transformative change has not been systematically investigated from a scientific perspective. One possible reason for the scant research on this topic is that, within the psychological field, change is generally regarded as a gradual and linear process, which occurs either as a result of developmental changes that happen over the lifespan (from birth to death) or as the effect of counseling and psychotherapy interventions (McDonald 2008; Kottler 2014). However, increasing evidence from across disciplines suggests that the process of change is not always incremental and can also occur in discontinuous and nonlinear ways, although not necessarily instantaneous (Hayes et al. 2007; Skalski and Hardy 2013). Furthermore, a considerable body of research has recognized the clinical significance of transformational change and its potential healing effects (C'de Baca and Wilbourne 2004; Kottler 2014). In reviewing this literature, I will show that personal transformation is essentially a process that allows individuals to explore new spaces of possibilities for thinking, feeling, and acting, by providing novel lenses or frames through which understanding themselves and reality.

Transformation versus Change

William James was among the first psychologists to explore the nature of life-changing experiences.

In his great classic, *The Varieties of Religious Experience* (James 1902), James analyzed the phenomenon of conversions and their moral implications. As he observed: "Whenever one aim grows so stable as to expel definitively its previous rivals from an individual's life, we tend to speak of the phenomenon, and even wonder at it, as a transformation" (James 1902, p. 70). James was especially interested in conversions that are manifested as sudden, dramatic, and unexpected. Most of the examples of conversions that James reports in his book are characterized by a sense of regeneration and a deep alteration of character. James stressed that intense **emotions** play a significant role in shaping conversions: "Emotional occasions, especially violent ones, are extremely potent in precipitating mental rearrangements. The sudden and explosive ways in which love, jealousy, guilt, fear, remorse, or anger can seize upon one are known to everybody. Hope, happiness, security, resolve, emotions characteristic of conversion, can be equally explosive. And emotions that come in this explosive way seldom leave things as they found them" (pp. 184–185).

About one century after James' work, psychologists William Miller and Janet C'de Baca (2001) introduced the concept of "quantum change" to describe "a vivid, surprising, benevolent, and enduring personal transformation" (p. 4). The authors used the adjective "quantum" to emphasize the peculiar character of this process of change, which is linked with an identifiable, distinctive, and memorable experience during which the transformation occurred, or at least began. According to Miller and C'de Baca, such experiences are usually very vivid, allowing individuals to recount them with a great deal of detail. The element of surprise is related to the extraordinary and unexpected nature of the experience. For these authors, a transformative experience is also characterized by a profound benevolent quality: although the event can be immediately perceived as unsettling and destabilizing, it tends to be associated with a feeling of goodness and overall positivity. The final distinctive feature of quantum change is that its effects are enduring. In Miller and C'de Baca's own terms, it represents "a one-way door through which there is no going back"

(p. 5). Drawing on the analysis of dozens of stories from interviews and questionnaires collected from participants in New Mexico, Miller and C'de Baca identified two types of quantum change: the "insightful" type and the "mystical" type (Miller and C'De Baca 1994, 2001). **Insightful** changes are described as breakthrough of internal awareness, such as those occurring in psychotherapy. These are "a-ha" experiences in which the person comes to a new realization, a new way of thinking or understanding. **Insightful** transformations grow out of life experiences, in that they tend to follow personal development. By contrast, mystical quantum changes are akin to James's (1902) religious conversions, involving altered state of consciousness and intense feelings of awe; in Miller and C'de Baca's own words, "They flood the person's thinking and feeling processes in such an intense manner that it is though the person is being redesigned" (p. 72).

Jarvis (1997) introduced the concept of *epiphanic experience*, defining it as "one of sudden discontinuous change, leading to profound, positive, and enduring transformation through reconfiguration of an individual's most deeply held beliefs about self and world." McDonald (2008) described epiphanic experience as "sudden and abrupt momentary insights and/or changes in perspective that transform permanently the individual's concept of self and identity through the creation of new meaning in the individual's life" (p. 90). According to McDonald, epiphanies are momentary experiences of transcendence characterized by a peculiar profile that distinguishes them from other types of developmental change and transformation, including the following core features: (a) antecedent state: epiphanies are often characterized by periods of anxiety, depression, and inner turmoil; (b) suddenness: they are sudden and abrupt; (c) personal transformation: epiphanies are an experience of profound change; (d) illumination/**insight**: epiphanies are an acute awareness of something new, something that the individual had previously been blind to; (e) meaning-making: epiphanies are profound **insights** because they are deemed significant to the individual's life; and (f) enduring nature: although the actual epiphany is a momentary

experience, the personal transformation that results is permanent and lasting.

According to Jack Mezirow (1978, 1991, 2000), transformative learning is "the process by which we transform problematic frames of reference (mindsets, habits of mind, meaning perspectives) – sets of assumption and expectation – to make them more inclusive, discriminating, open, reflective and **emotionally** able to change. Such frames are better because they are more likely to generate beliefs and opinions that will prove truer or justified to guide action" (Mezirow 2003, pp. 59–59). The basic tenet of Mezirow's framework is that people view and understand life experiences through specific "frames of reference," which are sets of fixed assumptions and expectations encompassing two dimensions: "habits of minds" (i.e., habitual ways of thinking, feeling, and acting influenced by assumptions that constitute a set of social and cultural codes) and "point of views" (i.e., how these assumptions are expressed). Existing frames of references filter and limit future learning opportunities, since people tend to attribute old meanings to new experiences through them. Crucially, individuals can change these meaning schemas if they engage in critical reflection on their experiences, eventually leading to a perspective transformation. Mezirow holds that an individual might go through a transformative learning experience when faced with a "disorienting dilemma," which challenges existing habits of minds and require the person to critically examine them. For Mezirow, a disorienting dilemma is usually triggered by a life crisis or major life transition (e.g., death, illness, separation, or divorce), but it can also result from "an eye-opening discussion, book, poem, or painting or from efforts to understand a different culture with customs that contradict our own previously accepted presuppositions" (p. 168).

Mezirow argues that critical reflection plays an essential role in the transformative learning process and identifies three types of reflections that can occur when people face a dilemma: (i) content reflection, (ii) process reflection, and (iii) premise reflection. The first two are involved when we reflect on the content of an actual issue (i.e., "what are the key issues to examine?") or on the

process by which we solved a specific problem (i.e., “how did I get here?”). These areas of reflection result in the transformation of meaning schemas, which is a common, everyday occurrence. In contrast, premise reflection concerns the relevance of the problem itself (i.e., “why did this happen?”) and involves a critique of the pre-suppositions on which our beliefs have been built. According to Mezirow, premise reflection can bring about the most significant learning, as it results in the transformation of one’s overall meaning structure.

Which Experiences Are Transformative?

Although in principle all experiences have the potential to change us, we intuitively know that not all experiences bear the same transformative potential. According to the philosopher Laurie Paul (2014), an experience can truly change us if it is both *epistemically* and *personally* transformative. Paul argues that an experience is epistemically transformative when it allows an individual to grasp new knowledge that would be inaccessible to the knower until he or she has such an experience: for example, seeing a color for the first time. However, there are experiences that not only teach us something totally new, but that are also able to change our point of view and core preferences: for example, the experience of having a child not only provides new knowledge about what is like to have a baby, but it can also change a person’s values, priorities, and self-conception in ways that are deep and unpredictable. For Paul, personally transformative experiences can be of various natures, such as “(experiencing) a horrific physical attack, gaining a new sensory ability, having a traumatic accident, undergoing major surgery, winning an Olympic gold medal, participating in a revolution, having a religious conversion, having a child, experiencing the death of a parent, making a major scientific discovery, or experiencing the death of a child” (p. 16).

Paul’s definition of personally transformative experiences points to the important question of whether *positive* personal transformation can be originated by also potentially disruptive life

events, such as a major illness, the loss of a significant other, or natural or social catastrophes such as earthquake, tsunami, war, and terrorism. The posttraumatic growth model, developed by Calhoun and Tedeschi (1998), Tedeschi and Calhoun (2004), offers an affirmatory answer to this question, suggesting that even traumatic or highly stressful events can be a source of personal development. According to Tedeschi and Calhoun, changes in the aftermath of crisis can occur in five general domains: appreciation of life (having an increased appreciation for life in general), social relationships (having more meaningful and deeper interpersonal relationships), personal strength (having an increased sense of personal strength, feeling stronger than before), new priorities (having changed priorities about what really matters in life), and spirituality (having an enhanced sense of spirituality, feeling connected to something bigger than oneself (Calhoun and Tedeschi 1998; Tedeschi and Calhoun 2004). The authors argue that a devastating event or a major life crisis can trigger a complex set of cognitive and **emotional** processes which lead to a reassessment and reconstruction of an individual schemas, goals, and beliefs. According to Tedeschi and Calhoun, this meaning-making process can foster the development of new life **narratives** and **insights**, eventually leading to higher levels of satisfaction and psychological well-being.

The posttraumatic growth model focuses on the potential positive changes following highly stressful experiences. But could also positive **emotional** experiences be a facilitator for personal growth? The idea that positive **emotions** are possible catalysts for growth has been explored by different theoretical frameworks in recent years, including the broaden-and-build theory (Fredrickson 2001; Fredrickson and Branigan 2005) and the “inspire-and-rewire” hypothesis (Keltner and Haidt 2003). Barbara Fredrickson’s broaden-and-build theory argues that **emotions** such as joy, interest, contentment, and love prompt individuals to *broaden* the range of thoughts and actions (e.g., play, explore, savor, and integrate) than is typical (Fredrickson and Branigan 2005) and help individuals *building* enduring

psychological, intellectual, physical, and social resources. For example, the positive **emotion** of joy creates the urge to play and get involved; however, playing also allows to create long-lasting resources, which are the skills acquired through the experiential learning it prompts. Some **emotions** bear a higher transformative potential than others: an example is **awe**, a complex, and little-understood emotion that lies “in the upper reaches of pleasure and on the boundary of fear” (Keltner and Haidt 2003, p. 297). According to Keltner and Haidt (2003) **awe** is characterized by two key appraisals: the perception of something vast and the subsequent need to accommodate the experience (Keltner and Haidt 2003). Vastness refers to any stimulus perceived as much larger than the self’s ordinary frame of reference: this can be represented by a natural event/phenomenon – such as witnessing a thunderstorm, the Grand Canyon, or a very tall mountain. However, vastness can also be conceptual, such as being presented with a complex idea, studying a beautiful equation or contemplating eternity (Keltner and Haidt 2003). The second appraisal of **awe** – need for accommodation – is defined by Keltner and Haidt as an “inability to assimilate an experience into current mental structures” (p. 304). It is a process by which individuals reconstruct their cognitive schema when a new experience cannot be adapted to their original cognitive structures. Crucially, according to Keltner and Haidt, accommodation can be either successful, leading to an enlightening experience (associated with an expansion of one’s frame of reference); or unsuccessful (when one fails to understand), leading to terrifying and upsetting feelings.

In recent years, several studies have begun to document the transformative psychological effects of experiencing **awe** (Chirico and Yaden 2018). Studies have found that **awe** can inspire a diminished sense of self (also known as “the small self” effect) (Keltner and Haidt 2003; Shiota et al. 2007; Campos et al. 2013; Piff et al. 2015) in which the self-concept becomes smaller and individuals view themselves less important and as part of a larger collective (Le et al. 2019). Empirical research has highlighted several beneficial

impacts of **awe**, including pro-social values (Piff et al. 2015), sense of social connection (Bai et al. 2017; Shiota et al. 2007), humility (Stellar et al. 2018), life satisfaction (Rudd et al. 2012), and meaning in life (Rivera et al. 2019). **Awe** was classed as a “self-transcendent experience,” defined as transient mental states characterized by decreased self-salience and increased feelings of connectedness to other people and one’s surroundings (Yaden et al. 2017). The self-transcendent constructs that fall into this category also include flow (Csikszentmihalyi 1990), mindfulness (Vago and Silbersweig 2012), mystical experiences, peak experiences (Maslow 1964), and positive **emotions** that entail a self-transcendent quality such as elevation, compassion, admiration, gratitude, love, and, as mentioned above, **awe**. According to Yaden et al. (2017), these mental states are experienced along a spectrum of intensity that ranges from the routine (e.g., losing yourself in music or a book), to the intense and potentially transformative (e.g., feeling connected to everything and everyone).

Roepke (2013) introduced a parallel concept to posttraumatic growth – the postecstatic growth model – that explores the positive psychological changes after **emotional** peak experiences like those described above. Roepke (2013) proposed that postecstatic growth occurs in specific areas, namely spirituality (having a closer connection to something bigger than oneself), meaning (having a clearer sense of the meaning of one’s life), social relationships (having deeper and closer relationships), and self-esteem (having more self-esteem). Considering that these perceived benefits seem significantly overlap with the positive psychological effects that have highly stressful events, Mangelsdorf and Eid (2015) suggested that posttraumatic growth and postecstatic growth may be similar processes, which can be facilitated by the same within-person factors following major life events independent of an event’s **emotional** valence: in other words, people who are more likely to experience posttraumatic growth are also more likely to experience postecstatic growth and vice versa. A recent meta-analysis (Mangelsdorf et al. 2019) covering 122 longitudinal studies found support for the existence of

actual posttraumatic and postecstatic growth, with positive trends for self-esteem, positive relationships, and mastery after both positive and negative events; furthermore, no evidence was found that negative life events have a stronger effect than positive ones, indicating that people tend to experience psychological gains over time independently from the valence of encountered life events.

Can Positive Transformative Experiences Be Elicited?

As self-transcendent **emotions** play a crucial role in personal growth, could it be possible identify ways for inviting, eliciting or facilitating such experiences? In human history, several cognitive techniques and artifacts have been developed to foster self-transcendent experiences. These include, for example, meditation, hypnosis, and other techniques for inducing altered states of consciousness (Tart 1972), including psychedelic drugs (Millière et al. 2018). In recent years, several scholars have started exploring the role of interactive technologies to help foster transformative experiences (Gaggioli 2016; Buie 2019; Kitson et al. 2019). Buie (Buie 2019) proposed to define a transcendent experience facilitated by technology as a “transcendent user experience (TUX).” For example, research has started exploring the potential of VR for inducing intense experiences of **awe** (Chirico et al. 2016). Chirico et al. (2018) describe results of a study, which tested the efficacy of virtual environments designed to elicit **awe** experiences, by enhancing perception of vastness and need for accommodation. Quesnel and Riecke (2018) tried to induce **awe** via a virtual environment that allows for the appraisal of the Earth’s landscapes, cityscapes, and a view of the planet from Earth’s orbit. To test participants’ **awe** intensity, the authors used a custom-made “goosecam” that is able to measure the frequency of goose bumps for each participant as well as subjectively reported feelings of **awe**. Results of the experiment showed that immersive **virtual reality** can elicit subjective experiences of awe and physiological goose bumps were observed in

several participants. Stepanova et al. (2019) provide a design framework to create **virtual reality** experiences of the “Overview Effect,” a profound cognitive shift reported by many space-travelers triggered by the sight of the earth from beyond its atmosphere (Yaden et al. 2016). According to Riva et al. (2016), **virtual reality** (VR) is a transformative **technology**, because it can modify our experience through the high level of personal efficacy and self-reflectiveness generated by sense of presence and emotional engagement. VR can be used to simulate “**possible worlds**” and “possible selves” and even simulating conditions that break the laws of nature, that is, by inducing the illusion of owning a different body. These unique features of VR, used alone or in combination with other brain-based technologies may create the conditions for inviting powerful transformative experiences (Gaggioli 2016; Riva et al. 2016).

Conclusions

Transformative change is one of the least understood mechanisms of psychological change. The systematic study of this phenomenon is only at start and common definitions and methods of analysis are lacking. However, the investigation of transformative experiences has a significant potential. From the scientific standpoint, the study of personal transformation could shed light on mechanism of discontinuous and nonlinear change, which has been a fruitful endeavor across the disciplines but not yet fully addressed in the psychological domain (Hayes et al. 2007). At the applied level, several authors have emphasized the clinical significance and potential healing effects of transformative experiences. The present review of relevant literature on transformative change allows identifying some potential avenues for interdisciplinary research on this elusive yet fascinating phenomenon. A first challenge concerns the development of a more comprehensive understanding of transformative change as a process, by focusing on its common antecedents, the experience of transformation, and its proximal and long-term outcomes. Although qualitative

accounts of these phases abound, quantitative research at multiple levels of analysis – that is, social, behavioral, and neuro-psychological – could also provide new insights on the phenomenon of personal transformation. For example, recent studies have begun to explore the neurobiological underpinnings of complex self-transcendent emotional experiences, such as **awe** (van Elk et al. 2019), **flow** (Cheron 2016), and mindfulness (Taylor et al. 2012), suggesting common mechanisms involved in these transient mental states at the brain level (Yaden et al. 2017).

At applied level, the study of transformative experiences could inspire the development of new clinical interventions and therapeutic techniques, at the same time improving our understanding of the mechanisms of change underlying them, that is, spiritual practices that have been used since ancient times. Along this line, it is important to consider the role that emerging technologies, such as **virtual and augmented reality**, could have in assisting a person going through a personal transformation (Gaggioli 2016; Riva et al. 2016). Indeed, an increasing number of studies show the potential of using these technologies for eliciting self-transcendent experiences, such as awe and **flow**, which are considered to hold a significant transformational potential. At the same time, ethical implications of transformative cognition should not be overlooked. Also, the integration of neuroscience methods and technological tools in the study of transformative experiences should be accompanied by careful considerations about the risks of embracing over-reductionistic stances, which could undermine the importance of adopting a holistic and multidisciplinary perspective in the study of this complex phenomenon (Schneider 2017).

In conclusion, the scientific study of transformative experience is attracting interest from a growing number of scholars in different disciplines. Although research in this area is still evolving, the understanding of fundamental mechanisms of personal transformation could carry wide-ranging implications. It is hoped that this analysis will encourage and stimulate further steps towards the establishment of transformative cognition as a mature scientific topic.

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U

Ultimate Value

► [Spirituality](#)

Keywords

Actionable uncertainty · Genuine doubt · Mundane uncertainty · Profound uncertainty · Risk · Structured uncertainty · The possible

Uncertainty

Ronald A. Beghetto
Mary Lou Fulton Teachers College, Arizona State University, Tempe, AZ, USA

Abstract

Uncertainty is a gateway to the possible. Although the concept of uncertainty often connotes a negative or potentially hazardous state of being, scholars have long recognized that uncertainty also serves as a stimulus for new thought, beliefs, and actions. In this way, uncertainty can serve as an opening to the possible. The aim of this entry is to discuss how uncertainty has been conceptualized in the literature, including different types of uncertainty that people experience and how those experiences can propel us into the possible. Considerations for drawing connections among uncertainty, the possible, and related areas of inquiry are also discussed.

Definition and Overview

Uncertainty refers to a state of doubt. It connotes a lack of determinateness, sureness, stability, control, and predictability. Although uncertainty typically refers to one's own experience of doubt in the present moment, it also includes past- and future-oriented doubts about others, features of the environment, and the interrelationship among self, others, and context (Jordan and McDaniel 2014). It thereby refers to a present state of not knowing, a future oriented inability to confidently predict what will happen in the future and a potential lack of clarity of how to make sense of past events.

Given that uncertainty is associated with lack of clarity, control, and determinateness, it tends to be viewed as an unpleasant state that should be quickly resolved. In this conception, states of uncertainty serve as omens that signify risk and impending harm (Byrnes 2011; Reith 2004) and because people are risk adverse (Mumford et al. 2006), they attempt to avoid, manage, mitigate, and quickly resolve their encounters with uncertainty. Along these lines, there is a tradition of scholarship aimed at the “strategic management of uncertainty” (Collis 1992; Jauch and Kraft

1986). Such efforts are focused on planning for and controlling uncertainty in an effort to minimize potential hazards and maximize any potential benefits stemming from states of uncertainty. The notion that uncertainty can be managed, controlled, or even proactively eliminated has been traced back to what Reith (2004) has described as an “optimistic Enlightenment belief in the possibility of eliminating the uncertainties of the future through rational action in the present” (p. 384).

Not all scholars conceptualize uncertainty as a phenomenon that can be controlled or should be quickly resolved once experienced. Moreover, as will be discussed in the section that follows, there is a long line of scholars who recognize that although experiencing uncertainty is often uncomfortable and can sometimes result in negative outcomes, it can also be an animating force, which opens up new states of awareness and new possibilities for thought and action (Beghetto 2019a, c; Dewey 1910; Peirce 1958). It is this latter view of uncertainty that positions it as a gateway to the possible.

Uncertainty and the Possible

There are various ways we experience uncertainty and not all of our experiences with uncertainty motivate new possibilities. One way to think about our experiences with uncertainty is to recognize that it can be experienced at different levels of intensity. Indeed, given that daily life is always and already shot through with some level of uncertainty, we are not able to fully attend and respond to all of the uncertainties we face (Beghetto 2016; Dewey 1910). Some of the uncertainties we face are experienced at a lower level of intensity, what might be called *mundane uncertainties*, and often go by without much notice or response. Other uncertainties we face can be extremely intense or, what might be called *profound uncertainties*, which strike us as completely unknowable. Although profound uncertainties can be unsettling, we coexist with them even though there is little we can do to actively or ever resolve them. This leaves us with a wide variety of moderately intense

experiences with uncertainty, what might be called actionable uncertainty. Actionable uncertainty is a state of doubt that rises to a level of awareness whereby we find ourselves at an impasse *and* feel the need to explore and enact new possibilities. It is this latter experience of uncertainty that scholars have recognized as motivating new modes inquiry and new possibilities for thought and action (Bardt 2019; Beghetto 2019a; Dewey 1910; Glăveanu 2020; Peirce 1958).

The eighteenth-century French literary critic, Antoine Leonard Thomas (1773), for instance, underscored the primacy of doubt in thought and awareness. Thomas, in his commentary on Descartes, explained that although we dwell in a state of “universal doubt” and feel compelled to find a foothold when faced with doubt, doubt serves as basis for our thinking and existential awareness: *since I doubt, I think, since I think, I exist* (i.e., “Puisque je doute, je pense; puisque je pense, j’existe,” Thomas 1773, p. 25). In this construction, it is the experience of doubt that is primary to and opens up the possibilities for our thoughts (Dubito, Ergo Cogito) and actions (Dubito, ergo faciam, see Bardt 2019, p. 30).

Charles Sanders Peirce, the American Pragmatist and polymath, went further arguing that the only form of thinking that ever generates a new idea is that which occurs under a state of *genuine doubt*, not the paper doubts of philosophical speculation, but the upending doubt we feel when our typical forms of reason (e.g., induction and deduction) fail us. As Peirce has described it, new thought has its genesis in “some surprising phenomenon, some experience which either disappoints an expectation, or breaks in upon some habit or expectation” (Peirce 1958, n.p.). John Dewey (1910) similarly noted, that it is the “state of perplexity, hesitation, and doubt” (Dewey 1910, p. 9) that serves as the antecedent for new thoughts and actions. New ideas and behaviors become necessary under states of genuine uncertainty because our former ways of thought and action no longer serve us.

Actionable uncertainty viewed from this perspective represents a fundamental and continuous aspect of the human experience (Glăveanu 2020).

Indeed, although uncertainty may be anticipated and minimized through planning and imposed structures and routines, it can never be fully eliminated. This is because lived situations are dynamic and thereby always and already shot through with some level of uncertainty and risk (Beghetto 2019b; Breakwell 2014; Byrnes 2011). Rather than conceptualize uncertainty and the risks associated with it as an impending hazard, which is outside of our construction of reality (Reith 2004), scholars who view uncertainty as a signifier of the possible recognize that it can have both potential benefits and potential drawbacks. Moreover, they also recognize that attempting to avoid or rapidly resolve uncertainty can actually be more problematic than engaging with uncertainty and taking time to explore new possibilities (Beghetto 2019b; Byrnes 2011).

Encounters with actionable uncertainty thereby serve as a signifier that new thought and action is needed to arrive at a reasonable, albeit temporary, state of resolution. Instead of attempting to avoid or quickly eliminate uncertainty, we can learn to invite, engage, and sustain it by considering and enacting new possibilities. Indeed, as Dewey (1910) has explained, “acquiring the attitude of suspended conclusion” allows us to “maintain the state of doubt,” protract our inquiries (Dewey 1910, p. 13), and, in turn, realize new possibilities (Dewey 1910). Figure 1 illustrates this cycle of actionable uncertainty.

As illustrated in Fig. 1, encounters with actionable uncertainty serve as a gateway to the

possible, because they disrupt our expectations. These encounters often occur when we attempt to enact preconceived plans and designs. People who work with physical materials, for instance, quickly learn that no matter how clearly conceived a design they have in mind, once they attempt to enact their designs, the materials often “speak back” and resist their expectations. As Bardt (2019) has explained,

When we manipulate actual material, wood for instance, it continually surprises and overturns the mental ‘model’ of wood. (p. 28)

When a material doesn’t fit our mind’s assumptions – and it never does when we engage it – feelings such as doubt and belief emerge to be important ways to navigate the gulf between the mind’s stable concepts of material and material’s mutability. (p. 31)

The “gulf” that Bardt (2019) describes can be thought of as an opening or gateway for the possible. It is the liminal space we find ourselves in when the expected meets the unexpected (Aoki 2004; Beghetto 2017). It is in this in-between space where Dewey’s “attitude of suspended conclusion” becomes important – allowing us to explore and enact new possibilities rather than attempt to ignore, force-fit, or otherwise quickly resolve the doubt we encounter. Our encounters with actionable uncertainty are not limited to our engagement with physical materials, they also occur anytime we act in the world with overwrought expectations or plans.

Professional educators, for instance, often design highly planned and sequenced lessons. Indeed, educators learn to “plan away uncertainty” by detailing minute-to-minute activities and sometimes even rehearse scripted interactions with students in an effort to avoid the risk of encountering chaotic feelings of doubt or uncertainty when teaching (Beghetto 2017). Still, no matter how carefully planned and rehearsed a lesson, uncertainties still arise when the curriculum as planned meets the curriculum as lived (Aoki 2004).

Continuing with the example of teaching, there are various sources of rupture that can emerge when the planned lesson meets the lived lesson. These sources include (Beghetto 2017):



Uncertainty, Fig. 1 Actionable uncertainty

- *Social ruptures* (unexpected emotional, behavioral, ideational, and interactional responses of students, e.g., students engaging in side conversations, students getting upset, or taking the lesson in unexpected directions)
- *Internal ruptures* (unexpected responses of instructors, e.g., conflicting internal dialogues; recognizing a potentially new direction that the lesson can take; feeling disorganized, confused, frustrated, disconnected)
- *Material ruptures* (unexpected interactions, resistance, and problems with the planned use of tools, materials, and technologies, e.g., technology failing, learning materials affording unexpected uses)
- *Societal-situational ruptures* (unexpected situational, societal, and global factors that disrupt seemingly stable habits, routines, and expectations and result in states of actionable uncertainty, e.g., COVID-19 pandemic of 2020 causing school closures and resulting rapid and mass movement to online forms of teaching and learning)

In addition to these surprising encounters with uncertainty, it is also possible for encounters with actionable uncertainty to be designed into an experience to provoke possibility thinking and creative action (Beghetto 2019c). Intentionally designing or planning for uncertainty may at first blush seem oxymoronic. Indeed, how can uncertainty, which is a state of not knowing be planned or designed into an experience? Although it may be true, as Charles Sanders Peirce has argued, that genuine states of uncertainty, which engender situations of surprise, disruption, and unknowing, cannot be willed into being (Lane 2014); it is still possible to design situations wherein opportunities for encountering and working with uncertainty are purposefully induced.

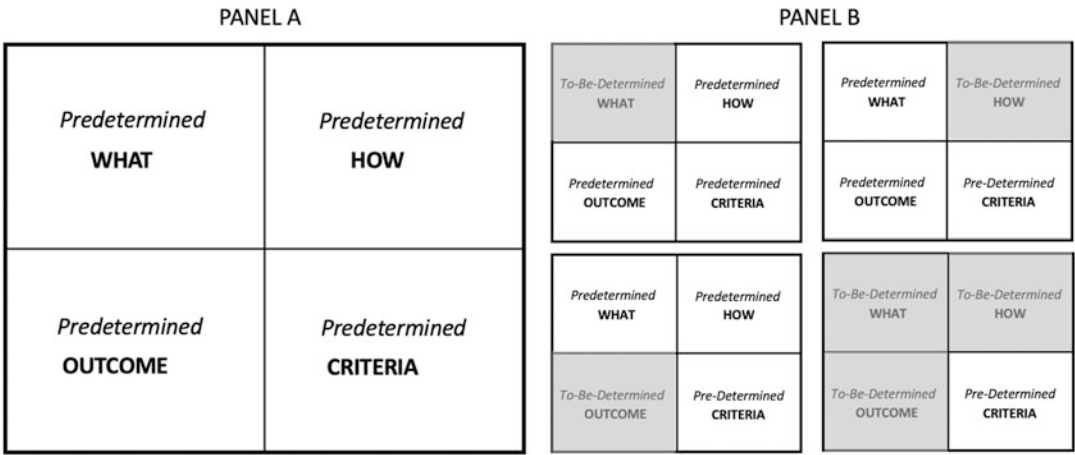
An example of doing so, what has elsewhere been called *structured uncertainty* (Beghetto 2019c), involves designing experiences that blend predetermined elements with to-be-determined elements. The predetermined elements provide the *structure* to help guide the experience, such as providing criteria for success,

guidelines for engaging with the experience, and information on how assistance might be obtained during the experience. The to-be-determined elements represent the *uncertainty* of the experience because how those elements are engaged with and resolved is not known or determined in advance. Exploring the concept of structured uncertainty a bit further can help clarify how designed experiences can also serve as a gateway to the possible.

Let us take the example of a designed learning experience. Learning experiences can be thought of as including four core elements (Beghetto 2019b): the *what* (i.e., the task to be accomplished), the *how* (i.e., the procedures or approach for accomplishing the task); the *outcome* (i.e., the expected result of engaging in the task), and the *criteria* (i.e., the guidelines, rules, supports available, or other features that help determine a successful outcome). As has been discussed, most plans and designs endeavor to *eliminate* uncertainty by predetermining all the elements of an experience in advance (see Fig. 2, Panel A), whereas structured uncertainty blends predetermined elements with to-be-determined elements (see Fig. 2, Panel B).

Designed encounters with uncertainty vary in complexity with respect to how much uncertainty is introduced by the to-be-determined elements (Beghetto 2018). More specifically, as illustrated in Fig. 2 (Panel B), designed experiences can range from somewhat less complex experiences (e.g., a teacher teaches one way of completing a task and then requires students to come up with their own way of completing the task) to more complex experiences that include multiple to-be-determined elements (e.g., students are asked to identify their own task, their own way of completing it, their own products that demonstrate successful completion, and even assist with the development of criteria for success).

The more to-be-determined elements, the more uncertainty and, in turn, the more room for the possible. Even in designed experiences that include one to-be-determined element, the possible can still be animated in ways that enable all participants to explore and benefit from new



Uncertainty, Fig. 2 Variations in designing encounters with uncertainty

possibilities. Consider the example of a teacher who requires students to come up with their own way of solving a problem and the students collectively come up with and share with each other more than a dozen viable possibilities. The result of doing so can extend the possibilities beyond what any one individual in the group (including the teacher) could come up with on their own.

Finally, designing encounters with uncertainty also includes making sure that supports are available to people as they work with the to-be-determined elements (Beghetto 2018). Example supports include timely assistance (i.e., letting people know how they can receive as-needed assistance), dynamic challenges (i.e., increasing or reducing complexity by adding or removing uncertainty), and guidance (i.e., criteria, guidelines, and ground rules). These supports structure the experience and help to ensure that the uncertainty encountered remains actionable, rather than becoming over- or overwhelming.

Conclusion

Although uncertainty can be an uncomfortable aspect of our lived experiences, it can also prompt us to consider and enact new possibilities for thought and action. As has been discussed, not all encounters with uncertainty result in new

possibilities. There are, however, at least two instances when we can act on uncertainty. The first pertains to situations wherein our expectations run up against our lived experiences and our habitual ways of thinking and acting no longer serve us. In such cases, the doubt we encounter serves as a signifier that exploring and enacting new possibilities are necessary to work with and, at least temporarily, resolve the uncertainty we face.

The second instance where we can act on uncertainty is when we have designed experiences that require engagement with to-be-determined aspects of the experience. In such cases, we are presented with structured opportunities to engage with uncertainty in an effort to move toward a full array of new possibilities for ourselves, others, and our collective experiences in the world (Glăveanu 2018). Although we can experience some sense of resolution through the enactment of new possibilities, uncertainty always and already remains central to our experience and thereby can later necessitate further exploration and enactment of additional possibilities for the way we think, know, and act. This process occurs even in seemingly settled situations (e.g., scientific understanding, completed artistic works) as uncertainty can emerge from new ways of knowing and when “finished” works open to new interpretations (Anderson 1987).

Conceptualizing uncertainty as a gateway to the possible represents an important line of inquiry that offers an alternative perspective to conceptualizations that view uncertainty as something that should be avoided or immediately resolved once encountered. Indeed, viewing uncertainty as a gateway to new possibilities for thought and action can help us approach encounters with uncertainty with a willingness to suspend our desire to quickly conclude the experience and instead engage with this state of doubt in an effort to explore the new possibilities it affords (Beghetto 2016; Dewey 1910). This perspective is in line with descriptions of related experiences that help animate the possible, including the experience of wonder (Glăveanu 2020), states of awe (see Chirico, ► “Awe”), creative learning (see Beghetto, “Creative Learning and the Possible”), and risk taking (see Vacondio and Dickert, ► “Risk”). Future work building on a conceptualization of actionable uncertainty as a gateway to the possible can help advance theory and research aimed at exploring how unexpected and designed encounters with uncertainty open up new ways of thought and action for ourselves and others. Such efforts may also help us realize complementary perspectives in related and even seemingly incompatible work on uncertainty and the possible.

Cross-References

- “As If” Thinking
- Awe
- Creative Learning
- Creative Problem-Solving
- Error
- Ignorance
- Insight
- Perspective-Taking
- Problem Finding
- Risk

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Keywords

Apperception · Body · Differential unconscious · Leibniz · Mind · Sleep · Small perceptions · Soul · Thinking

Unconscious in Philosophy

Alessandra Aloisi
University of Oxford, Oxford, UK

Abstract

The word “unconscious” (from the Late Latin *inconsci*, composed from the prefix *in-* plus the adjective *consci*) denotes, in a broader sense, that which is not conscious: more precisely, the set of those psychic or mental processes that escape consciousness or of which the subject is not aware. It can be used as both an adjective and a noun, but the second use appears only at the end of the nineteenth century, when the word “unconscious” begins to refer to a reality underlying consciousness or devoid of consciousness (see section Consciousness). As such, the realm of the unconscious will receive particular importance at the beginning of the twentieth century with the arrival of psychoanalysis, which will propose undertaking a systematic study of it.

The aim of this entry is to uncover some of the philosophical conceptions of the unconscious which preceded and were left aside by the emergence of the psychoanalytical model. In particular, we will focus on the idea of the unconscious that was first introduced by the German philosopher Gottfried Wilhelm Leibniz (1646–1716) (see section Leibniz). We will see how, within the context of Leibniz's philosophy, the problem of the unconscious appears not so much as part of an abstract theory of knowledge as part of a theory of perception (see section Aesthetics). After summarizing the context of the philosophical debate that led Leibniz to introduce his theory of “small perceptions,” this entry will show its possible implications for a general philosophy of the unconscious and its legacy in later thinkers.

Introduction

Speaking of the relationship between psychology and mental illness, Michel Foucault observed that we wrongly tend to think of psychology as that discipline which is supposed to explain madness and which contains, to a certain extent, the truth of madness. In reality, Foucault argues, it is madness that holds the truth of psychology, because it is madness, as that specific field of experience that we have begun to isolate and medicalize, starting from the mid-seventeenth century, which provides the conditions that make psychology possible and allows us to explain its emergence as a discipline during the nineteenth century (Foucault 1954, pp. 74–75). Something similar could be argued regarding the relationship between the unconscious and psychoanalysis. We tend to think of psychoanalysis as that specific discipline, form of knowledge, or practice that is intended to explain the unconscious and that would be able to reveal its truth or its functioning. However, it would be more accurate to reverse this relationship and see the unconscious as that specific field of investigation which, taking shape during the eighteenth and nineteenth centuries, allows us to explain the emergence of psychoanalysis.

Building on Ellenberger's pioneering work (Ellenberger 1970), scholars have started to regard Sigmund Freud not so much as the discoverer or inventor of the unconscious as the one who retrospectively polarized and systematized an already existing and multiform field of investigation (Rancière 2001; Aloisi and Camilletti 2019). If the term “unconscious” was introduced, in its substantive form, only over the course of the nineteenth century, the notion itself was not unknown before the term came into use. In fact, one may argue that this terminological innovation was indeed the result of a specific cultural process that had already been taking place, on a European scale, over the course of the eighteenth and

nineteenth centuries, at the intersection between philosophy, literature, and medicine, through a complex conceptual landscape which was not completely absorbed by Freudian synthesis and systematization. Viewed from this perspective, the notion of the “unconscious” reveals itself to be historically much more stratified, multifaceted, and composite than it appears when only considered within the narrative that culminates in psychoanalysis. As argued by Jean Starobinski, “Freud’s original contribution was not so much to have spoken of the unconscious but to have, so to speak, lifted the monopoly held on it by organic life and to have installed it within the psychic apparatus itself” (Starobinski 1990, p. 29). Freud, in other words, “dephysiologized” psychology and “desomatized” the causal system commonly accepted by his predecessors, assigning to the body a largely secondary role in the modern understanding of the unconscious, which ceased to have organic life as its main source (Vila 1998, p. 5).

The aim of this entry is to uncover some of the modern philosophical conceptions of the unconscious which preceded and were left aside by the emergence of the psychoanalytical model. Thanks to their heterogeneity in relation to the Freudian paradigm, not only can these conceptions provide tools for dialoguing with non-Western understandings of unconscious mental processes (Waldrom 2003), but also for meeting the challenge that cognitive science, by promoting an idea of “cognitive unconscious”, which reassesses the role of the body and the mechanism of adaptation over repression, presents to psychoanalysis today (Wilson 2002).

We will focus in particular on Leibniz’s theory of “small perceptions.” Developed in opposition to both Descartes and Locke, this theory promotes a specific idea of the unconscious which can be defined as a “differential unconscious” (Deleuze 1968, 1980). It is beyond the scope of this entry to show how, in other respects, the English philosopher John Locke could also be considered the initiator of a fragmentary conception of the self (“horizontal fragmentation”), which anticipates, albeit with substantial differences, a certain idea of the unconscious that will be endorsed by Freud (“vertical fragmentation”) (Goldstein 2005, pp. 3–5).

The Mind Always Thinks

The German philosopher Gottfried Wilhelm Leibniz (1646–1716) can be regarded as one of the first to have developed a theory of the unconscious within a broader philosophical debate concerning the nature of the soul and its relationship with the faculty of thinking. This debate – which overlaps with a series of traditional philosophical problems, such as that of the relationship between mind (“thinking thing”) and body (“extended thing”) or the question of the souls of animals – was characterized by two opposing positions: On the one hand, Descartes (1596–1650), according to whom the mind always thinks, and, on the other hand, Locke (1632–1704), who contested this Cartesian principle. Descartes’ position is clearly explained in a letter of 9 January 1642 to Guillaume Gibeuf:

The reason why I am convinced that the soul always thinks is the same that makes me believe that the light always shines, though there are no eyes seeing it, that the heat is always hot, though nobody gets heated; likewise, the body or extended thing always has extension; and, more in general, that which constitutes the nature of a thing is always in it while it exists. Thus, when one says that the soul ceases to think, it would be easier for me to believe that it would cease to exist, than to envisage that it could be without thought (Descartes 1996, v. 3, pp. 478–479).

If thought is the very essence of the soul or thinking thing, just as extension is the very essence of the body or extended thing, it follows that the soul, in order to exist, must always think. Our mind always thinks, even when its thoughts leave no trace in our memory (according to Descartes, this is indeed what happens almost every night when we dream, or during the day, when we have many thoughts that we do not remember). Likewise, light always shines, even when there are no eyes to perceive it, and the heat is no less hot from not heating anyone. The soul can therefore be without a certain thought, but never without thinking.

In 1670, Locke will question this principle according to which the mind always thinks.

According to Locke, this Cartesian assertion is radically contradicted by a simple piece of

evidence: “Most men pass a great part of their sleep without dreaming” (Locke 1975, book 2, ch. 1, sec. 15). Isn’t this enough to show that the mind can exist without thinking? Saying, as Descartes does, that even in the soundest sleep, the mind thinks but memory retains no trace of its thoughts is a nonsense in Locke’s view: “I would be glad to learn from these men who so confidently pronounce that the human soul [...] always thinks, how they come to know it [...], when they themselves do not perceive it” (Locke 1975, book 2, ch. 1, sec. 18). Assuming a philosophical perspective which recalls the objection that Aristotle himself had already addressed to the followers of the Megarian school, who were accused of confusing “actuality” and “potentiality” (Aristotle, *Metaphysics* 1046b 30), Locke will reply to Descartes that thought is not so much the essence of the soul as its faculty and that, as such, it may not be always actualized. Thinking, Locke argues, is “the proper action of the soul; yet it is not necessary to suppose, that it should be always thinking, always in action.” Thought is not to the soul what extension is to the body. The equivalent of thought is rather movement: It is no more necessary “for the soul always to think, than for the body always to move,” since “the perception of ideas” is to the soul “what motion is to the body, not its essence, but one of its operations” (Locke 1975, book 2, ch. 1, sec. 9).

If, leaving aside the philosophical jargon, we look at this debate from our own contemporary perspective, Descartes’ principle does not seem to pose as many problems to us as it does to Locke. Since we acknowledge without difficulty the idea that thought can be unconscious, we can also allow the possibility that the mind always thinks. However, to fully grasp the reasons for Locke’s resistance as well as the revolutionary nature of the solution proposed by Leibniz, it is necessary to point out that a central presupposition of these early-modern discussions around the nature of the soul and the faculty of thought is that “thinking and consciousness are strictly correlative: that thought, in other words, cannot occur without the thinker’s being simultaneously aware of it” (Heller-Roazen 2007, pp. 186–187). Of every thought, at the very moment in which we have it,

the mind is necessarily conscious, even when that same thought, once passed, leaves no trace in our memory. This fundamental principle of the Cartesian school was also accepted by its opponents, such as Locke, and allows us to understand how his criticisms actually pointed to an impasse in modern thought – an impasse that will be resolved by Leibniz.

Leibniz’s Theory of Small Perceptions

Leibniz’s idea of the unconscious takes shape within this polemic and presents itself as an original solution, because it implies a complete redistribution of the problems’ plan. Thanks to his “theory of small perceptions,” Leibniz can reassess on a new basis the Cartesian principle according to which the mind always thinks, while also questioning, at the same time, the implicit assumption, shared by both Descartes and Locke, according to which thinking coincides with consciousness. One of the earliest formulations of Leibniz’s criticism of Locke (later developed in the *New Essays on Human Understanding*, completed around 1709) is expressed in a letter to Thomas Burnett written in 1698. In this letter, Leibniz confesses to his correspondent that he shares “the sentiment of those who believe that the soul always thinks” and intends to demonstrate this assumption by using the same example of sleep. Even though he recognizes, with Locke, that there may be cases of dreamless sleep, Leibniz nevertheless observes that this does not prove that there has been a cessation of all movement in the soul. Even in these cases, Leibniz maintains, the soul does not cease to be affected by minute or “small perceptions,” which are not noticeable enough to be remembered. Even though they are too weak to be noticed, they are always retained, as are infinite other small perceptions that we have continually during the day. Leibniz then provides a range of evidence in this regard: Those who have slept in a cold place often notice, when they wake up, that they had a “confused and weak sensation” of cold while asleep. Likewise, Leibniz continues, “I know a person who wakes up whenever a lamp

that he keeps lit in his room at night goes out.” This makes it clear that “if one did not always have perceptions, one could never be awoken from sleep” (Leibniz 1978, v. 5, pp. 23–24).

Leibniz’s theory of small perceptions clearly represents, in other respects, a way to radically contest the Cartesian theory of the soul. According to Leibniz, the main fault of the Cartesians consisted in not being able to distinguish between “perception” and that which Leibniz himself calls, by coining a new term that will have a long philosophical and psychological afterlife, “apperception” (from the French verb *appercevoir*) (see section Apperception). As Leibniz explains in the *Monadology* and in the *Principles of Nature and of Grace Founded in Reason*, unlike perception, which is unconscious, apperception is the perception of perceiving, the perception accompanied by awareness (see Leibniz 1978, v. 6, p. 610). If the Cartesians do not make this distinction, it is because they count as nothing those perceptions of which one is not aware; this is the reason why they wrongly denied the existence of animals’ souls. However, what is interesting for our investigation here is that, used to defend.

The Cartesian principle according to which the mind always thinks, the theory of small perceptions entails a significant twist in this rationalist thesis, which is bent in the direction of the unconscious: Leibniz’s “insistence on the incessant activity of the mind quickly reveals itself to be, in truth, a vindication of an uninterrupted ‘thinking’ carried out beyond – or, rather, beneath – all the conscious acts of a clearly cogitating mind” (Heller-Roazen 2007, p. 185).

In doing so, Leibniz questions for the first time the idea according to which thinking and consciousness are strictly correlative, and that thought cannot occur without the thinker’s being simultaneously aware of it. If Leibniz introduced the term “apperception,” it was not so much to indicate the existence in the soul of such a thing as “consciousness” as “to clear a region within the mind for that which is not apperception and which accompanies it at every point: that state of mere ‘perception’ in which there is no awareness” (Heller-Roazen 2007,

pp. 204–205) – in other words, for that which will be called “unconscious.”

To sum up, while according to the perspective of early-modern thinkers such as Descartes and Locke, the idea of an “unconscious thought” is intrinsically oxymoronic, the theory of small perceptions allows Leibniz to show how, at every moment, there is an infinity of perceptions or modifications in the soul of which we are not aware, and which, nevertheless, take part in our conscious perception. The most famous example is that of the sea, described in the Preface to the *New Essays on Human Understanding*:

To hear this noise, as we do, we must hear the parts that compose this whole – that is to say, the sound of each wave, although each of these little noises is known only in the confused blend of all the others together, and it would not be noticed if the wave that produces it were alone. Indeed, we have to be affected a little by the movement of this wave and have some perception of each of these noises, however small they are; otherwise we would not have that of a hundred thousand waves, since a hundred thousand nothings could never produce a thing (Leibniz 1978 v. 5, p. 47).

In our conscious perception there is an indistinct background that is composed by an infinity of small perceptions (later philosophers, such as Maine de Biran, will prefer to speak of “affections”). Our mind’s incessant movement reflects the incessant movement of the universe as well as of our body (such as the circulation of the blood and all the movements that are internal to the viscera), even though all those movements in the soul remain imperceptible as such, in a single continuum of perpetual perceptions that ties all the affections together.

The Differential Unconscious

The metaphysical and theoretical implications of this theory are extremely fascinating from the viewpoint of a philosophy of the unconscious. This is the case first because it entails that, by means of its small perceptions, unaccompanied by reflection or awareness, every soul is a “monad” – that is, “an image of the Universe” that is perceived in its totality, according to

different degrees of obscurity, confusion, clarity, and distinction. In other words, every soul or monad is a “living mirror representing the Universe according to its point of view” and “with respect to its own body,” which determines its finite zone of clarity in the world (Leibniz 1978, v. 4, p. 562). This move has pivotal implications, in many ways analogous to those produced by psychoanalysis, to the extent that, by showing how mental activity and consciousness are not identical, it produces a significant reduction in the scope of conscious life and an extension of mental life and the unconscious. However, while psychoanalysis will accomplish this enlargement by going toward the most hidden depths of the subject, the extension of the mental dimension carried out by Leibniz does not go so much inward as outward, since the universe itself is included, more or less obscurely, in the perceptual ray of the monad.

Second, another pivotal aspect of Leibniz’s theory of the unconscious lies in the fact that it introduced a “differential” conception of the unconscious in its relation to consciousness. Between the small perceptions, of which we are not aware, and the apperceptions of which we are aware, there lies an *infinite difference of degree*, and each conscious perception is complex and composed of an endless number of successive perceptions, many of which remain unconscious. Every conscious perception represents a threshold and the minute perceptions correspond to its continuous and omnipresent background noise, which we always perceive even though we are not consciously aware of it. This theory – which will find its successors in authors such as Maine de Biran, Marcel Proust, and Gilles Deleuze, among others (see Kerslake 2007, Smith 2010, Milz 2020, Piazza & Vincenti 2022) – involves another essential difference with respect to the conception of the unconscious later developed by Freud, who finds his predecessors in a different philosophical tradition represented by Kant, Hegel, and Schopenhauer:

Indeed, Leibniz can be said to have developed one of the first theories of the unconscious, a theory which is very different from the one developed by Freud. The difference is that Freud conceived of the unconscious in a *conflictual* or *oppositional*

relationship to consciousness, and not a *differential* relationship to consciousness. In this sense, Freud was dependent on Kant, Hegel, and their successors, who explicitly oriented the unconscious in the direction of a conflict of will, and no longer a differential of perception (Smith 2012, p. 142).

In the Leibnizian theory of the “differential unconscious,” the unconscious therefore refers to that which escapes consciousness and remains unknown to it, not necessarily that which resists and opposes it. In every conscious perception there is necessarily a part that remains unconscious, not fully perceived.

Conclusion

The problems of the unconscious can thus be linked to the question of the possible or, more precisely, of the virtual (for the difference between “possible” and “virtual” see Deleuze 1966, ch. 5). In the Freudian view, the unconscious, finding itself in a relationship of conflict and opposition with the conscience, acts as that which attracts representations and snatches them from the conscience. On the contrary, in the idea of the differential unconscious promoted by Leibniz, small or unconscious perceptions are conceived of as “virtuals” that, without lacking any reality, can be actualized or not – that is to say, can become conscious or not, on the basis of shifting relationships of “compossibility” with a myriad of other perceptions that are related to our body.

Cross-References

- ▶ [Aesthetics](#)
- ▶ [Apperception](#)
- ▶ [Consciousness](#)
- ▶ [Emergence](#)
- ▶ [Innovation](#)
- ▶ [Narratives](#)
- ▶ [Perspective](#)
- ▶ [Possible in Psychology](#)
- ▶ [The Possible in the Life and Works of Sigmund Freud](#)
- ▶ [Reality](#)

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Unconscious in Psychology

Ilaria Maria Antonietta Benzi¹, Alberto Milesi²
and Laura Antonia Lucia Parolin²

¹Applied Technology for Neuro-Psychology Lab,
IRCCS Istituto Auxologico Italiano, Milan, Italy

²Università degli Studi di Milano-Bicocca, Milan,
Italy

Abstract

The concept of the unconscious in psychology (or unconscious mind) summarizes the complexity of the dynamics that characterize most of human's mental functioning. Since the paradigmatic revolution of the late nineteenth century, questions such as how the unconscious world is structured, how it influences cognition, emotion, motivation, and behaviors have pushed theoretical reflections and scientific research forward, always suggesting new reinterpretations of the concept itself. In particular, its impact on psychotherapy fostered the creation of different models and conceptualizations for treatment about the dynamics of the therapeutic relationship and the individual's mental functioning. Focusing on the realm of the unconscious mind inevitably opens the gates to the possible, encouraging the formulation of new vocabularies and taxonomies. This contribution offers a definition and a historical framework for the idea of the unconscious in the field of psychology. Then, from a brief review of the leading scientific research questions related to this concept, it reflects on the implications for clinical work and its associations with the possible in the therapeutic relationship. Insight and “aha” moments,

creativity, nonlinear dynamics, and approaches that combine the advancements of neuroscience and psychoanalytical contributions are just some of the theoretical and applicative branches that boldly ventured to “think the unthinkable.”

Keywords

Unconscious · Collective unconscious ·
Cognitive unconscious · Possible ·
Psychology · Psychoanalysis · Insight

The idea of the unconscious (or unconscious mind) encompasses all the aspects of the way the mind works that the individual cannot grasp on a conscious level, thus reflects on them. Indeed, unconscious processes significantly influence motivation, memory, emotions, and in general everyone’s sense of self and identity (see chapter ► [“Consciousness”](#)). Although the term unconscious is relatively modern due to the contribution of philosophers such as Leibniz (1765) and Schelling (1800), the idea of the existence of elusive aspects of reality, which go beyond conscious reflection, is far from unknown in the history of art, religion, music, and of course philosophy. Indeed, the end of the nineteenth century represented an ideal cradle for the development of a more structured reflection on the unthinkable processes of the mind. The advent of non-Euclidean geometries, Schoenberg’s atonal experimentations, expressionism in figurative art and poetry are just some of the examples of an era in which new models do not merely substitute old ones. In fact, from the cracks that weakened previous paradigms once used to understand reality, it was possible to conceive new and extraordinary worlds in science, literature, and the arts. It is not surprising that on these bases, the then still young discipline of psychology began to try to find suitable answers to the questions revolving around the activity of the unconscious mind and how it influences cognition, emotion, motivation, and behaviors (Ellenberger 1970; Kandel 2012).

Starting from the Freudian contribution (see chapter ► [“The Possible in the Life and Works of Sigmund Freud”](#)), this entry will define the

concept of the unconscious in psychology and its historical roots. Moreover, it will provide a brief overview of research contributions on this topic, focusing on its impact on different dimensions of the mind (i.e., cognition, emotion, motivation, and behavior) as well as recent and challenging conceptualizations such as neuropsychanalysis. Finally, it will suggest a reflection on the most stimulating connections between the unconscious and the possible in psychotherapy, starting from the contributions on insight-like phenomena, creativity, and nonlinear dynamics in the therapeutic relationship (Lis et al. 2007).

Definition and Historical Roots of Unconscious in Psychology

The etymology of the word un- (“not”) conscious stems from the Latin word *consci*us (“knowing, aware”) from the verb *conscire* which assimilated *con* (“with”) and *scire* (“to know”).

The idea of “knowing” without actually “knowing” opens the doors of a paradox that is indeed only deceptive, de facto letting us conceive the possibility of an inner world of meanings (i.e., emotional, motivational) that moves within us without the consciousness being able to access it. The paradigmatic revolution, already mentioned above, represents the trigger that finally opened the gates to the exploration of the unconscious world.

Indeed, at the end of the nineteenth century, clinicians actively engaged in discovering the different mechanisms underlying the normal and pathological functioning of the mind (see chapter ► [“Psychopathology”](#)) but one decisive contribution was Sigmund Freud’s that, in his famous volume *Die Traumdeutung* (“The interpretation of dreams,” 1900) theorized the existence of the unconscious, a part of the human mind in which our deepest desires, needs, and feelings are hidden.

Freud used the apt metaphor of an iceberg to describe the three parts that define the structure of the human mind: only a small part of the iceberg floats out of the water representing the conscious mind, as a layer immediately under the surface is

the preconscious mind, while the greater portion of ice, hidden from the conscious world above, represents the unconscious mind. As the conscious mind contains all the elements of which we are aware, which we can have a mental representation of, the preconscious mind retains all that is out of our consciousness but can quickly become conscious given a small effort of attention or remembrance.

However, this model's real innovative contribution was the idea of the unconscious mind, where all of the most important desires and fantasies flourish, free from most of the constraints that regulate the functioning of the other two parts of the mind. Indeed, the unconscious objects and often conflicting forces are trapped from the possibility of introspection, held prisoners by our inner censorship because of their unacceptability: thus, all these unconscious elements create mental energy that needs to be freed. In the same essay, Freud explains how, during the nightdream, the unconscious material is represented through different images to the individual's awareness though still transfigured by the influence of different mechanisms of the psyche (see chapter ► "Dreams").

Moreover, in 1901 Freud publishes "*Zur Psychopathologie des Alltagslebens*" ("The psychopathology of everyday life") in which he introduced what he calls slips as representations of the conflicts that happen in the unconscious mind. In this essay, Freud discusses the idea that there are specific deviations in everyday behaviors, such as forgetting things, or saying one word instead of one another, or other random actions are clear signals of our inner turmoil. We usually do not notice these kinds of mistakes, but thanks to the psychoanalytical method, this material can be analyzed to understand our most profound nature better.

Later on, in "*Das Ich und Das Es*" ("The Ego and the Id"; 1923) Freud suggested a second model for the structure of the mind in which the unconscious still played a fundamental role in the definition of inner conflicts and psychopathology. All in all, the Freudian model signified an unprecedented stimulus in exploring the complexity underlying human behavioral phenotypes.

Another relevant contribution to the comprehension of the unconscious was Jung's conceptualization of the collective unconscious (1912). Although Jung distanced himself from the International Psychoanalytical Association's dogmatic theories, his theorization of the collective unconscious is still considered one of the most critical contributions in psychoanalysis.

Jung brought up the idea of the collective unconscious by analyzing some delusional processes in schizophrenic patients, suggesting the existence of an immutable common representative knowledge heritage that transcends time and space and is acquired indistinctly by all humankind. Jung identified two fundamental elements to describe the collective unconscious: instincts, intended as all the natural reactions that did not come from learning, and archetypes, meaning representational contents that belong to all humankind. However, Jung was not completely satisfied with his theorization as, in "*Wandlungen und Symbole der Libido*" ("Psychology of the Unconscious"; 1912), he stated that there is no hereditability of the specific representations, but there is hereditability of the possibility of representations.

Another fundamental intuition was Bion's idea of the inaccessible unconscious a fourth category of the psyche added to the three of Freud's first model, which stores all the mnestic traces of intrauterine life, including primitive traumatic experiences of frustration that cannot be mentally represented. Bion (1962) introduced the concept of Beta elements, that is, raw emotions representing primitive experiences that we cannot think about or even transform in dream-like materials. Nor the conscious or the unconscious mind can store these elements: it is the Alpha function that transforms these basic feelings in elementary representations of mental contents that we can think of (Alpha elements).

In opposition to the psychoanalytical standpoint that was very popular in psychology during the Fifties of the twentieth century, cognitive approaches to psychology began to gather empirical evidence on mental processes and their

functioning. An essential limitation of the Freudian unconscious concept was the impossibility of observing, manipulating, and measuring it in its components through the scientific method. Things started to change thanks to a seminal contribution from Nisbett and Wilson (1977) that explored from a cognitive standpoint to what extent we can be aware of the reasons behind human behaviors. At a time when higher functions of the mind, such as behavior, were processes that could only be explored by consciousness, the idea of being able to “telling more than we know” opened a crack in the cognitive paradigm, allowing the science of the mind to develop its exploration of the dynamics and features of the unconscious mind.

Hence, a decade later, Kihlstrom (1987) theorized and empirically analyzed the so-called cognitive unconscious. In his innovative work, he demonstrated how cognitive functions such as memory and perception could occur outside the individual’s consciousness. Indeed, he demonstrated that many mental processes that pertain to a more procedural knowledge happen outside of the realm of awareness and are activated without any introspection. One of the most common examples in psychology about procedural memory is the ability to ride a bike: once learned, we cannot think about it and divide it in sequences of actions because it now belongs to the cognitive unconscious.

This brief historical excursus lays the foundations for understanding how research has tried to explore the unconscious processes of the mind. Indeed, the introduction of the cognitive unconscious allowed to methodically approach the exploration of the more deeply submerged part of the Freudian iceberg, highlighting some pivotal questions to which the research of the following decades will try to give an answer: what cognitive processes must we study to understand the unconscious dynamics of the mind? How much of our conscious life is influenced by unconscious processes? What are the implications for clinical practice and psychotherapy? These are just some of the burning questions that have driven scientific research since the second half of the twentieth century.

Research on Unconscious in Psychology

Freud, like Elvis, has been dead for a number of years but continues to be cited with some regularity. Westen (1998)

As Drew Westen wrote in 1998, reflecting on the scientific legacy of psychoanalysis and acknowledging and focusing on the unconscious lead to three radical shifts: first, the cognitive revolution that put at the center of scientific reflection the study of mental processes, even unconscious ones; second, the developments of psychoanalytical thinking to explain how our inner world develops (adaptively or not) according to socio-cultural contexts and experiences; and last but not least, the epistemological shift that has allowed us to explore the processes of the mind in the light of emotions and motivation, two central components of the psychoanalytical contribution.

This brief overview of the literature summarizes some of the main directions in which research explored the mind’s implicit dynamics.

Starting from Kihlstrom’s conceptualization of the cognitive unconscious, scientific research, despite the disagreements with the psychoanalytical theories, recognized that most mental processes are unconscious. In particular, cognitive science has long and thoroughly explored aspects related to the functioning of implicit memory, that is, that part of memory that can be observed in behavior but cannot be recalled consciously. One type of memory, already mentioned above, is procedural memory that stores all the “instructional manuals” that allow us to perform the most diverse actions and tasks without thinking about them. Another example of unconscious (implicit) memory is the one that emerges from priming experiments where previous exposure to a stimulus (prime) that is associated with meaning allows us to acquire new information more quickly (Bargh 2006). An exciting research area on the cognitive unconscious explores the processes of learning and re-elaboration of information that has its basis in the most recent theories on neural networks and implies the presence of unconscious processes in the learning of new information as in problem-solving and decision making. All in all,

numerous contributions from neuropsychology research involving patients with specific brain damage and research on priming from social psychology exhibited evidence for the human ability to perform complex behaviors unconsciously. This underlines how the scientific community readily accepted the existence of unconscious cognitive processes (Bargh and Morsella 2008).

However, a few years will pass from Kihlstrom's initial contribution for research to explore the other two crucial dimensions that Freud theorized as primary forces of unconscious functioning: emotion and motivation. Kihlstrom et al. (2000) suggested the existence of two processes behind the observable effects of unconscious emotions. First, they theorized the existence of "unconsciously generated emotions" that encompass all cases in which the individual can experience and recognize his or her emotional responses, but cannot trace back their unconscious causes (e.g., memories, thoughts). A simple example of unconsciously generated affects in clinical psychology is in individuals that suffer from anxiety: A specific characteristic of these manifestations is the full awareness of the emotion arising (e.g., fear of dying) without the possibility of a direct connection with the mental states that caused it. Second, Kihlstrom and colleagues defined the case of "implicit emotions" where the subject is not aware of his emotional states or otherwise able to recognize them, even though it is possible to detect the emotional activation in the brain through specific techniques. Indeed, since the study of consciousness (and non-consciousness) is not possible in animal models, the advancement of brain process investigation techniques has been a driving factor in research on emotions and their regulation. Scherer (2005) defines them as "the bulk of the iceberg," underlining how most of our emotional functioning interchanges on an unconscious dimension. Numerous studies on the contribution of brain areas such as the amygdala have demonstrated the subsistence of these processes (Smith and Lane 2015).

Another aspect, perhaps the most radical of the Freudian theory, was putting motivation within the unconscious processes: This implied the

fundamental assumption that "the why" of our actions, thoughts, and behaviors pertains to an unthinkable dimension. Thus, the root of who we are, our self and identity, stems from the unconscious. The debate between psychoanalytical theories and cognitive sciences witnessed the latter rejecting this possibility for a long time. On the other hand, phenomena such as defense mechanisms are clinical examples of how individuals protect themselves from unconscious desires and motivations.

In 1989, McClelland suggested the distinction of implicit and explicit motives, highlighting the difference between research on motivation through indirect methodologies (e.g., projective measures) instead of self-reports: the former has shown a higher value of predicting behavioral outcomes. It makes sense that what is measured associatively (i.e., implicitly) instead of self-reported is less influenced by other variables (i.e., individuals might be unwilling to show their real motives or may even be unaware of them). Moreover, research on attitudes has made valuable contributions by showing how (unconscious) prejudice guides social behavior. Betsch et al. (2001) explored a theory that explains how our evaluations are implicitly formed, preserved as mnemonic traces, and used to judge specific targets. The underlying hypothesis is that our implicit value attributions (value accounts) influence the way of expressing an evaluation more than the traces of past experiences, especially under pressure. Recently, Kihlstrom (2019) reviewed the evidence that motivation, similarly to emotions, works on an unconscious level in different ways. First, it can be elicited unconsciously by external stimuli. Second, it can be elicited unconsciously by external stimuli that are also unconscious. Finally, the individual can be "aware of not being aware" of his/her motivations.

It will take about a century for psychoanalysis and the advancements of neural science to finally cross paths. With the advent of neuropsychanalysis (a term coined only in 1999), research finally manages to resolve the epistemological dualism between psychodynamic and neuroscientific traditions. In this sense, the search for the

neural bases of the unconscious represents a fundamental step.

Mark Solms (2017), a neurologist but also a psychoanalyst, represents one of the exponents of this new paradigm, providing data on the location of the unconscious within the functions of the brain. A central aspect of the contribution of neuropsychanalysis is the centrality of emotions in the organization of psychic life. While the cognitive approach to unconscious was unbalanced on aspects related to information processing, the shift to emotional aspects represents a radical change. Experience is processed and elaborated through a first instantaneous, subcortical, phylogenetically embedded response that immediately tells us (without us being able to perceive it) if a stimulus is threatening our survival. Subsequently, the stimulus is elaborated in a more sophisticated way on a cortical level, drawing on the mnemonic traces that are already present. In this way, neuropsychanalysis shows how most of our mental life takes place at an unconscious level, at the very basis of that iceberg that Freud had first imagined.

Research on the unconscious theorized as a set of implicit processes that encompasses cognition, emotion, and motivation has allowed substantiating the most important Freudian intuition. That is, most of mental life happens without us thinking about it, and the unconscious universe, which influences our choices and behaviors, is complex and fascinating. We will discuss some of the clinical implications of these considerations in the next section.

Unconscious and the Possible: Insight, Creativity, and Nonlinear Dynamics

In the dance we need to have a moment of waiting, not knowing what is coming next (the moment of *maybe*) for the dancing to be real. What we do next *is not known*, in a sense *does not exist* until the two partners construct it, each with his or her separate roles.

Bucci (2011)

Some of the initial questions of this contribution have already been answered thanks to the data

and considerations emerging from research and theories on the unconscious: a large part of the human mental activity takes place beyond consciousness, and different dimensions contribute to it (i.e., cognition, emotion, motivation). The question that still needs an answer (at least one among the possible ones) is what are the implications that scientific discoveries coming from cognitive sciences, neuroscience, and psychoanalysis have for clinical practice and, at large, for a framework of thinking on the human mind. Freud suggested some of them in his psychopathology of everyday life, as well as with the introduction of the dynamics related to transference (where the patient projects thoughts, feelings, and emotions from a past relationship onto the therapist), countertransference (where the therapist “resonates” of the patient’s inner world), and dream analysis.

Allan Schore, one of the pioneers of neuropsychanalysis, carried forward the concept of the implicit self, arguing that in addition to memory, thought, learning, and attention (all the processes highlighted by cognitive psychology), it is necessary to introduce the notions of implicit affect, implicit communication, and implicit self-regulation. As already anticipated in the previous section, the role of implicit emotion is one of the central aspects of the contribution of neuropsychanalysis: Adding communication and self-regulation to the equation fosters a thorough reflection on the impact of unconscious dynamics in psychotherapy. Indeed, the therapeutic relationship becomes a privileged place of observation of the “relational unconscious” as it is guided by the right hemisphere of the brain, working via associations and primary processes that we can also find in dreams and reveries (Schore 2011).

Indeed, it is in the therapeutic relationship that a fundamental manifestation of unconscious processes finds its place, the so-called “aha” moment in which new and unexpected elements come to light. As pointed out by Domash (2010), insight (which is “seeing/understanding from within”) frequently occurs in cases where stagnation is perceived, from the feeling that the therapeutic process is somehow facing an impasse. This is similar to a cognitive restructuring that includes

the emotional experience and marks a decisive point in the perception of the context and its meanings. Neuroimaging studies have shown that insight is a creative act that emerges from consciousness by bypassing logical reasoning (*ibidem*). Thus, the link between unconscious and creativity finds its possible manifestation in the psychotherapeutic relationship: the generative effort that allows the passage from one state of the mind to another unrelated requires an implicit intuition, embodied and embedded in experiential knowledge.

The understanding of creative processes in the therapeutic relationship, as well as in other contexts, unfolds through the subjective narration of the experience itself (the “aha” moment). As Nancy Andreasen explains:

The person is typically in some type of reverie or dissociative state when the mind wanders freely, and thoughts and images float around without censorship. During this fluid time, the brain is probably working feverishly, despite the subjective sense of reverie and relaxation. [...] As we think about this process using the terminology of mind and brain, then the primordial soup is the unconsciousness and process of making connections must arise from the efforts of the association cortex. (2011, p. 45)

Since the end of the twentieth century, the theory of psychotherapy has seen a significant revolution in the adoption of an interpersonal perspective. In this way, a significant gradient of complexity has been added, shifting the focus not only on the patient and the therapist’s internal dynamics but also on their interaction within the clinical relationship (Locati et al. 2017; Benzi et al. 2020). Thus, implicit processes that were previously a subjective dimension become shared implicit processes and, therefore, need new models to be explored. An intriguing perspective is offered by the theory of nonlinear dynamic systems that describe the processes of change, adopting a multifaceted perspective where every element considered is context-sensitive and varies upon different degrees while interacting with other elements. Borrowing the language of physics, Stolorow (2013) describes the process of change in psychotherapy within the intersubjective

relationship as nonlinear, unpredictable, and discontinuous and proposes a fascinating conceptualization of processes (even unconscious) in the therapeutic relationship.

Within the psychoanalytical framework, Bucci (2011) suggested an innovative model of psychopathology that focused on dissociation and stressed out the importance of the interpersonal relationship in psychotherapy, rooted in the advancements of both cognitive and affective neuroscience. This framework underlines the hypothesis that “in the treatment, the sub-symbolic communications potentially open new connections to the symbolic mode, which then feedback to deepen the subsymbolic explorations, and new, emergent shared schemas are constructed” (*ibidem*, p. 45). Overall, beyond the theoretical milieus, a crucial focus of the psychotherapeutic relationship is the possibility of bringing manifestations of the unconscious to the surface in order to integrate them into the patient’s experience (Craft 2014; Benzi et al. 2018).

This brief excursus reviews some of the main developments on the unconscious in psychology. Within different theoretical paradigms, the exploration of the “unthinkable” world has allowed us to advance in the mind’s knowledge, even the conscious one. Therefore, the great challenge for researchers, clinicians, and anyone who ventures into the understanding of the functioning of the unconscious mind is to be able to imagine a universe that runs with different rules, nonlinear and unpredictable, but above all, is to find the right tools to be able to describe it.

Studying the unconscious requires a creative effort in itself and the willingness to explore impossible routes, at least on paper.

Cross-References

- [Consciousness](#)
- [Dreams](#)
- [The Possible in the Life and Works of Sigmund Freud](#)
- [Psychopathology](#)

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Utopia

Gabriela Manley

University of St Andrews, St Andrews, UK

Abstract

In common vernacular, Utopia usually conjures up imaginations of an impossible place marked by its perfection and happiness. However, this represents but one of the many ways in which utopias can be understood. When studied closer, utopian studies scholars have found it hard to

reach a consensus on what a utopia is, and what it is for. Broadly speaking, we can find four different ways of understanding utopia: as a literary text; as a blueprint for society; as a critical reflection of the present; and as a simple pursuit for a better life. Crucially, all these categories speak to the possibility of a different way of life, be it elsewhere in space as with early utopian texts, or elsewhere in time as is most common in contemporary utopias. Utopias which exists elsewhere in time speak most directly to what is possible, as placing them in our own future serves to incite us to work toward them, making changes in the present that might approximate this possible future. This is the aim of most living utopian movements today – from #Occupy Wallstreet to new gene editing technology – which not only presents us with a vision for a possible utopia future, but also tells us how to get there, making the possible increasingly tangible.

Keywords

Utopia · Utopian · Future · Possible · Critical Utopias

Introduction

The origins of the concept of utopia are as hard to pin down as the meaning of the concept itself. The genre and the word were of course introduced by Thomas More in 1516, entering the common vernacular through his publication of *Utopia*. However, utopias as a concept are as old as political thought itself (Sargisson 2007), and although Plato's *Republic* is often considered the best-known early utopia, Sargent and Claeys (1999) open their *Utopia Reader* with a passage from Hesiod, dated back to eighth century B.C. In fact, More himself did not work on a *tabula rasa* to create his *Utopia*, but built on traditions of thought that can be traced back to ancient Greece and myths of the Golden Ages, making connections between the classics and Christian traditions to build a new imaginary world (Vieira 2010). More, therefore, provided us with a new word and new tools to explore a concept as old as politics; that of “the desire

for a better way of being” (Levitas 1990) – whatever this may be.

The word “utopia” is derived from the union of three Greek terms: *eu*, good; *ou*, non or not; and *topos*, place; creating an etymological pun that literally translates to “the good place that is no place.” By indicating a place which is not a place, it is creating a concept constituted by simultaneous affirmation and denial. This dissonance contained in the very name forms part of the core properties of utopia, which render utopia itself unachievable (it is, and yet it is not), and thus maintains it firmly fixed in the realm of the possible. It is this post-More iteration of utopia that concerns most scholars today, as it has encapsulated many attributes of modern thought (Vieira 2010). From global utopian movements such as #Occupy to modern debates on the future of gene modification and eugenics, imaginations of the possible future serve as critical reflections on the present (Moylan 1986).

The vague and paradoxical origin of utopia as “the good place that is no place” has allowed it to continuously acquire new meaning, serve new interests and morph into new concepts throughout the centuries. This diffuse nature – from politics, to literature, science, and art – has been at the basis of debate among researchers of Utopian Studies who have often found it difficult to reach a consensual definition.

Defining Utopia

Historically, utopia can be seen as broadly defined under four separate terms. First, it can simply be seen as the literary form that crystallizes the imaginations of utopia (such as More's *Utopia*, 1516). However, this definition is narrow to the extreme, excluding all nonnarrative texts and raising complicated categorical questions on what counts as a “utopian text.” Fredrick Jameson (2005:2) rightly points out that although there has often “been a need to distinguish between the Utopian form and the Utopian wish,” the life works of Ernst Bloch serve as a stark reminder of the impossibility of the task of separating the two, utopia being “a good deal more than the sum of its texts.”

Secondly, Utopia has been understood as the content of the imagined society. This is to say, what makes “the good place?” What is good and what is not? What would a perfect society look like? This approach to utopias has been the main focus of much anti-utopian scholarship as at its core it is making an association between utopianism and perfectionism and utopianism and fundamentalism, leading it to be routinely associated with authoritarian political regimes such as Hitler’s fascism and Stalin’s communism (Sargisson 2007). Both Karl Popper (1962) and Edmond Burke (1790) identified a certain totalitarianism at work under this definition of utopia rooted in the idea that no utopia is perfect for everyone, as utopia – under this definition – relies on the impossible requirements “that there are rational methods to determine once and for all what this ideal is and what the best means of its realization are” (Popper 1962: 161). Popper’s criticisms have been influential, with Leonard Shapiro (1972) and Jacob Talmon (1961) building on this idea of the utopian imagined society as a blueprint for the “perfect place” to construct a picture of utopia as the antithesis of liberalism. They are not the first to associate the idea of utopia with perfectionism. Early scholars such as Kaufmann (1879 quoted in Sargisson 2007: 12) popularized this relationship between perfectionism and utopia, describing it as a “happy island far away where perfect social relations prevail,” a definition that continues today in the common vernacular and dictionary definitions, becoming the most recognizable feature of utopia outside of utopian studies. Although many responses and criticisms have been levied at this approach of utopia as a blueprint for the perfect society (see Goodwin and Taylor 1982) many scholars of utopia today point to the *key* flaw in this approach lying in the very way utopia is being defined arguing that “the function of utopia is not its own realisation” (Sargisson 2007: 31). Referring back to the original meaning of the word (i.e., “a place that is no place”) they stress the idea of utopia as an inherently unachievable project, an end goal that never arrives, remaining by its own definition in the realm of the possible (Jameson 2005, Moylan and Baccolini 2007).

The third definition of utopia follows from these criticisms of utopia as a “blueprint” and takes on a functionalist approach, understanding utopia through its function as a tool to impact the reader, urging and encouraging change. This is the basis for what Moylan (1986) has termed *critical utopias*. Drawing from the works of Ernst Bloch and Fredric Jameson, Moylan argues that critical utopias are “explicit attempts to challenge and undermine hegemonic structures of political power in a common quest for emancipation while retaining and emphasizing the dangers inherent in totalizing visions” (Lancaster 2000: 111). In other words, the critical utopia functions to challenge traditional dualistic understandings of political possibilities by showing the ways in which revolutionary change can take place. A critical utopia aims to provoke change and action in the present by showing the possible otherwise. In this way, the function of utopia is indeed not “its own realisation,” nor is it a blueprint for an ideal society, but a means for critical reflection, change, and aspiration toward which we should always strive. Crucially, then, these utopias are not static, but ever developing as the horizon of what is possible changes (Jameson 2005; Moylan 2007; Sargisson 2007).

Although this approach has proven widely popular, Fatima Vieira (2010) (see also Levitas 2007) has argued that it limits what we may understand as “utopia” to the realm of the political, and proposes the fourth and final general definition of utopia as “a desire for a better life caused by a feeling of discontentment towards the society that one lives in” (Ibid. 6). Maintaining the definition of utopia so broad allows for the inclusion within the framework of utopia a vast range of texts informed by what Bloch (1986) considered to be the cornerstone of utopia: hope. Utopia here is then to be seen as a matter of attitude of aspirations to “a better life” inspired by the imagination of alternative possibilities. For Bloch (Ibid.), the impulse to achieve utopia is a subconscious ontological inevitability, as humankind cannot escape this constant longing for a better world. However, as Jameson (2005) points out, this leads us to a hermeneutic problem when we consider overtly self-conscious utopian projects and their relation to the subconscious ontological

structures Bloch is suggesting. Instead, Jameson (Ibid.) suggests an alternative way of reorganizing this “desire for a better life” into three separate categories of body, time, and collectivity.

It is these final two categories of utopia that are currently most widely explored among utopian scholars as they allow this vast and complex genre the greatest level of flexibility and critical reflexivity. Crucially, however, by adopting More’s paradoxical concept of the utopian “place that is no place” all four categories of utopia discussed fall under the realm of the possible, dealing with imaginations of a world as “other” that is related to our present state, either as an inspirational future (Sargisson 2007) or a critical warning (Moylan 1986). Broadly speaking, this utopian “other” occupies either a different place or different time and can represent positive or negative possibilities.

Utopias Elsewhere in Space

The “possible other” of utopia is originally found occupying a different *space* – rather than time – as the reader. More’s original *Utopia* describes Utopia as an island, which exists in the same time as More himself but finds itself isolated from the external world. The island is described as almost entirely free of external contact, with its precarious waters and strangely shaped land preventing outsider ships from finding it. It has existed in this isolation for centuries, and therefore its history and development are to be seen as separate from our (the reader’s) own. The island exists in our world, yet in a way it is not *of this world*. This topographical rupture created through isolation allows the utopia to break away from the socio-historical constraints of our “real world,” freeing up infinite possibilities for the creation of this new place where the author’s imagination can truly run wild and create “from scratch” another possible world. This is characteristic of the onset of utopian literature where we find static, a historical utopias most reminiscent of the first two definitions discussed above (Vieira 2010) (although there has indeed been heated debate on the correct reading of More’s *Utopia* (Davis 2010)).

Traditional Scottish folklore, for example, builds on this model of utopia with its tales of Brigadoon: a village that became enchanted centuries ago, becoming isolated and invisible to our world except for 1 day a year where it would become visible and accessible to outsiders. Much like *Utopia*, the town of Brigadoon is described as isolated, idyllic, and free of evil, remaining unaffected by time as the centuries pass.

These traditional Renaissance and early modern utopias were heavily influenced by contemporary quests of discovery and colonization, borrowing – sometimes directly – from current colonial conquests and new worlds (Pohl 2010), and would often justify the colonial process through these ideas of utopia by introducing “perfect systems” into new “primitive” societies. Francis Bacon’s *New Atlantis* (1627), Francis Godwin’s *A Discourse of A Voyage Thither* (1638) and Gabriel Plattes’ *A Description of the Famous Kingdome of Macaria* (1641) all follow similar patterns, displacing their utopias by placing them in faraway lands and undiscovered territories that bear a striking resemblance to current discoveries at the time, from the disastrous colonization of Guiana to the finding of Bermuda and the “New Worlds” of the Americas.

Early utopias set “elsewhere” in space rather than time often find themselves rejecting a temporal dimension at all, being imagined as a-historical by ignoring the past, and a-futural by eliminating the idea of progress and future from their horizon (there is no possible progress in a society which has achieved perfection). Presenting utopias in this way does invite the reader to take them as blueprints to follow or aspire to. Problematically, it critiques the current society and presents a utopian alternative without suggesting pathways to get there (Vieira 2010), leaving itself open to anti-utopian criticisms of the “ends justifying the means” (Popper 1962) – Nazi Germany comes to mind here. Further, these early utopias tended to impose archaic ideas of Paradise onto the real world, evoking imaginaries of the lost Golden Ages as a basis for their possible Utopias (Pohl 2010), offering us a very narrow version of what “a good place” ought to look like and raising the problematic moral questions posed

by anti-utopian scholars, in particular when taking into account the colonial influence on these texts.

Utopias Elsewhere in Time

In the eighteenth century utopias shifted from existing exclusively elsewhere in space, to existing elsewhere in time. Heavily influenced by the enlightenment discourses of progress, reason, sociability, and reform, utopian writers shifted their focus from “elsewhere,” introducing the first utopias to be set in the future (also known as *euchronias* or “the good place in the future”). Utopias which exists elsewhere in time are far from a-historical, embracing history as a process of infinite improvement in which we can imagine utopia as the possible end product of modern progress. By projecting utopia into the possible future, the discourse enunciates a logic of causalities that presupposes certain actions (mainly those of political nature) might spur on the changes needed to achieve the imagined utopia (Vieira 2010). These utopias are therefore dynamic and a degree more flexible than utopias elsewhere in space.

Placing utopias in the future allows them to hold a distinct political dimension. They encourage us to work toward them, approximating this possible “other” by placing it in the imagination of our own space and time. Marx and Engels’s communist project can be seen as one such utopia (Moylan and Baccolini 2007) where historical consequences coupled with political progress may lead us to a changed new world (although Marx and Engels would balk at the idea of their project being described in this way, having considered the idea of utopia to be negative and detrimental).

Some utopian socialists went further than simply imaging a future utopia, creating small idyllic societies that demonstrated that utopia was indeed possible. Such were the communities of New Lanark in Scotland and New Harmony in Indiana that Robert Owen built as the basis for the creation of what he called “a new moral world.” In these communities, people lived with unprecedented social and worker’s rights, children attended free

and mandatory education, workers experiencing reduced hours and free access to healthcare among many other “idyllic” social reforms while still driving a thriving economy. Owen, in this way, aimed to prove that a socialist utopia in the future *was* possible though political reform. Utopias set in the future, then, present utopia as something not only theoretically possible, but accomplishable through progress, ascribing this possible “other” a much more concrete dimension. In these utopias, the present should therefore be understood in terms of its fulfillment of the future.

This is what forms the basis for Moylan’s “critical utopias” (1986). What utopia becomes is not a static, isolated blueprint of “a perfect place” but a possible future attainable through real change in the present. These utopias are “no longer the exhibit of an achieved Utopian construct, but rather the story of its production and of the very process of construction as such” (Jameson 2005: 217). Placing the utopias in the possible future of our own world allows them to perform the function of social critique in the present by offering a vision of a possible future (be it utopic or dystopic) that critiques the current status quo today (Sargisson 2007). Most prominently, for example, utopias of feminism, ecology, and self-management both in the spheres of work and the day-to-day life currently offer a united opposition toward capitalism, neoliberalism, and patriarchal structures today. These utopias are “no places” in two senses: they lie on the horizon – or as Bloch puts it in the “Not Yet” and they are not fully imagined. By focusing on one issue or voice at a time (rather than a whole social system) it allows for a plurality of voices and ideas that grants it the fluid nature it needs to overcome anti-utopian criticisms of the underserving Platonic ideal previously discussed.

These are the utopias (and dystopias) that we are most familiar with today. Kim Stanley Robinson’s *Mars* trilogy (1993–1996), Ursula Le Guin’s *The Dispossessed* (1974), Philip K. Dick’s *The Man in the High Castle* (1962), and Orwell’s *1984* (1949) are but a few examples of the vast repertoire of works written since the second half of the twentieth century that attempt

to showcase different ways of being that are possible within our own timeline, and seek to inspire and catalyze change. Crucially, then, utopias are about the present, they necessarily come from a place of discontent with the now and use the imagined possible future as a tool to inspire change or promote a wider social transformation.

Living Utopias

Spurred on by what Raza and Kurnik (2012) have called a “fundamental crisis of representative politics,” critical utopias have spilled over into the sociological imagination, inciting change and encouraging political uprisings on all sides of the political spectrum. The imaginings of a different world set in the future incites us to hope (or despair in the case of dystopias) and act toward this hopeful future, approximating it by closing the speculative gap between the present and the possible future through the pursuit of bringing the possible into actuality (Bryant and Knight 2019). The global #Occupy movement, for instance, emerged as a critical response to the global financial structures that created the 2008 financial crash. This inspired a collective utopian imagination of radical rupture with the past financial status quo in favor of a future free of global capitalism in which compassion and direct democracy would prevail (Nugent 2012). Occupiers looked to distance themselves from what was and what is, orienting themselves toward a temporal horizon that compels participants to imagine the future full of hope, promise, and possibility. Following the structure of a critical utopia, this sociopolitical terrain of that imagined future is yet to be fully defined, however the main object of critique is clear, and glimpses of the possible utopian future emerge, as one Occupier stated: “the best part of the occupation is the small slice of utopia we are creating... participatory assemblies...community building...horizontal collaboration” (Ibid.: 281). The imagination of this possible alternative utopian future works in two ways: as a social critique of the present and as a way of approximating the future through the efforts of bringing this possible into actuality.

Alternative economies form a large part of living utopian projects today, in particular in relation to property ownership. Sargisson’s (2007) extensive research across 60 alternative utopian communities in the UK and New Zealand highlights the central importance of fair economic management for the self-perpetuation of these communities. Each of these intentional communities she visited practiced an alternative economic system of ownership, exchange, and direct democracy, often tied to specific ideologies or utopian visions that were collectively shared. These communities serve as isolated islands of experimentation in which utopian visions of the future (such as a money-free economy based on More’s original *Utopia*) can be explored and inhabited. In this way, the utopians are rejecting the present conditions of the world which they find unacceptable and demonstrating that a different future is possible, much in the same way as Robert Owen intended with New Lanark. This embodiment of an alternative possible future once again aims to encourage and incite change in the present by proving its viability.

Alternative economies and financial systems form part of a larger global utopian movement for radically different politics born from a discontent with the current status quo. The Scottish independence movement, for instance, was born from a fundamental discontent with the way Westminster politics were being carried out in Scotland and the democratic imbalance that exists between the two countries. As an alternative, a new imaginative utopian future has been proposed, the Scottish National Party selling a vision of an independent Scotland as a prosperous, fair, thriving nation (Manley, 2019). Their slogan “Another Scotland is Possible” encapsulates Vieira’s (2010: 6) vision of utopia as “a desire for a better life caused by a feeling of discontentment towards the society that one lives in” in which this possibility of “a better place” becomes tangible through political action and the possibility of another independence referendum in the horizon.

More controversially, new debates on eugenics and gene editing have been dominated by both utopian and dystopian visions of the future. Eugenics ideas (i.e., the idea of improving the

gene pool of a population) were originally advocated by scientific and religious leaders at the turn of the twentieth century, driven by utopian ideals of social reform (Raz 2009). These ideals however later on lead to anti-utopian atrocities made in the name of progress by authoritarian regimes, most notably – but not exclusively – with the Nazis and their pursuit of the improved Arian race. Similarly, eugenic practices were carried out by countries not usually associated with authoritarianism, such as the USA and Sweden who for decades sterilized tens of thousands of mentally ill citizens. It is unsurprising then that much like Popper (1962) most are wary of utopias which speak of the human and improvement of the “race.” However, with the emergence of new technologies such as gene editing a relatively new utopian eugenics movement has emerged. Hinging on utopian outlooks of Transhumanism, it argues that it is an “intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate ageing and to greatly enhance human intellectual, physical, and psychological capacities” (Ibid. 608). The utopian vision they sell is one of a future free of any suffering brought on by the human body and argue that gene editing eugenics is the path that will lead us to this idyllic future. As what is possible evolves, so do alternative utopian visions of the future.

Conclusion

Utopia has proven itself to be a vast, complex, and slippery concept to capture, with scholars often disagreeing on narrow definitions and categories of inclusion. However, all utopias at their core deal with the idea of the possible, encapsulated in a “desire for a better life.” In this way, whether these utopias exist in another space or time, with different backgrounds and purposes, they will always seek to incite a feeling of possibility (be it elsewhere or in the future). Moving away from the idea of utopia as a static blueprint for a “perfect” society, contemporary utopian studies recognize the fluid and critical

nature of utopias, and the flexibility that the concept of a “place that is no place” offers. Through not just fiction, but political theory, revolutionary movements, arts, and sciences utopias do not only imagine a better world but tell us of people’s concerns with the now and their desires for tomorrow. By critiquing the present through the presentation of possible alternatives they inspire us to question and change the status quo, striving for this “better way of being.” This fluid definition of utopia allows for them to grow and evolve, adapting to the changing paradigms around them. As what is possible changes, so do our fears and desires, and therefore so does utopia.

Cross-References

► [Possible in Sociology](#)

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V

Values

Angela Uchoa Branco
Institute of Psychology, University of Brasília,
Brasília, Brazil

Abstract

The term *values* designates a psychological construct that plays an important role in motivating human actions and interactions with the world throughout individuals' life trajectories. Values operate at both individual and social group levels, acting as a sort of lens for interpreting the world—affecting one's perception, thoughts, feelings—and as a powerful motivational force for encouraging specific actions. Diverse theoretical perspectives conceive of values differently, focusing on their different roots and qualities. Due to the immense complexity of the psychological processes implied when we refer to values, the traditional approach of psychology has been too limited with most investigations carried out from a cognitivist quantitative methodology that simply measures the frequencies of particular pre-established values in specific populations. Pre-defined categories of fixed and mutually exclusive values, however, cannot actually explain the highly complex, plural, multifaceted, and intricate quality of human motivation. In this entry, some new venues to study and theoretically conceive of the issue

will be explored, opening up possible perspectives to the investigation of the ontogenesis of values and their development in specific socio-cultural contexts from a systemic cultural approach in psychology.

Keywords

Values · Moral values · Goals · Goal-orientation · Motivation · Beliefs

Introduction

The relevance of the subject—human values—has been acknowledged since the dawn of humankind. The notion of values—meaning what is worth achieving or not, i.e., preferences, goals, and purposes—has been proposed to make sense of people's actions and reactions from early philosophical attempts to find some order or regularity in the dynamics of human practices and experiences. Many Greek philosophers struggled with this peculiar psychological construct aiming at understanding the reasons—often not rational at all—that lies behind human actions and interactions. Among them, the work of Aristotle certainly stands out because he wrote at length on this topic with an emphasis on the right pathways and principles to orient the incessant human search for happiness alongside the role of virtues to achieve worthy lives. Since such old thoughtful inquiries about what motivates human actions—

beyond immediate demanding circumstances, or responses to basic physiologic needs—concepts like human *needs* and *values* have developed from different philosophical and scientific viewpoints or frameworks. The concepts of needs and values emerged as psychological constructs, which proposed to provide reasonable “explanations” about *why* human beings behave as they do, displaying distinct patterns of behaviors in specific contexts either with a certain degree of consistency or, not rarely, with contradictory courses of action.

Many of the idiosyncratic and sociocultural patterns of human interactions with self, others, and the world at large have attributed to distinctive traits of personality as well as the fact that people, individually or as a social group, tend to hold specific values, i.e., hold dear the attainment of certain objectives or general goals in their life experiences. However, due to the immense complexity of human phenomena and psychological processes, the simple inference and nomination of a particular set of values—typically found in people with certain personality characteristics or members of a certain social group—cannot actually explain the highly plural, multifaceted, and intricate quality of human motivation. As a result, instead of explaining why people behave in certain ways, the traditional quantitative studies of values—conducted by social and cross-cultural psychologists—can only function to generate a descriptive picture of human preferences. This may lead researchers to equivocal conclusions, which are explained in the following sections. This is becoming increasingly evident as the substantial complexity of this issue becomes more salient. Hence, now there is a growing need for new venues and possibilities to qualitatively investigate and analyze values which will, hopefully, lead to a more solid and all-encompassing theoretical base.

The matters addressed in this entry will be particularly for those interested in possible and alternative routes for investigating values, here approached from a dialogical cultural perspective that builds on the role of imagination, social interactions, human development, and cultural resources for possible future practices in the contexts of contemporary societies.

The following sections underline the necessity of innovative approaches to investigate human values by presenting and discussing some of the major aspects and dimensions of the phenomena. The work presented here takes a critical view of the traditional theoretical scientific framework still found in contemporary psychological literature about values (Knafo et al. 2011), which defines values as a “cognitive construct” (Oyserman 2015), as an “internalized social representation” (p. 37), exactly in the same way psychological mainstream conceives and analyzes the topic. Alternatively, this entry explores other conceptual-theoretical perspectives more akin to the multidimensional nature of human motivation, and especially analyzing the power of affectivity over the ontogenesis of values along individuals’ life trajectories. According to this new perspective, the dimension of affectivity, expressed at the diverse hierarchical levels of its regulatory function upon human psyche, plays a central part in the genesis and development of individuals’ and social groups’ values. The first section provides a brief historical account of the ideas of some philosophers and sociologists. The next section moves on to critically scrutinize the construct as it has been used and studied by social and developmental psychologists until the present day. The next sections, which propose a different viewpoint upon the subject of analysis, then open up the theoretical account on the issue of values to a multidisciplinary, complex, and systemic approach. The last section explores the topic further as it moves into the realms of the possible, the imagined, bringing into the domains of psychology—conceived as a normative or moral science (Brinkmann 2009, 2011)—the discussion about future expectations and alternatives. This discussion mainly concerns the development and implementation of new social practices concerning values, as well as the cultural development of both people and society.

Ethics and Values

The term values had multiple definitions depending on the historical time and on the

epistemological-theoretical background of the author. From the domains of theology, philosophy, art, and literature, the notion of values emerges as a stance for guiding directions of human actions; they are found in all the cultural narratives ever produced in history. The struggle between what is right or wrong, good or bad, and the accompanying implication of various forms of moral judgments, social preferences, rewards, and sanctions pervades our experiences and narratives all along the journey of humanity.

The Ancient Greeks were not the first to reflect upon issues of human motivation, but, certainly, their historical legacy in the realms of science and philosophy contributed to our present day understanding—though still poor—of the subject. Among others, Aristotle's profound elaborations over the best ways to achieve happiness and to live a good life—a life worth living—by behaving in accordance to a certain number of virtues, has a special influence. Virtues—meaning excellence in the performance of any action—such as truth, loyalty, courage, among others, were considered absolutely relevant to the experience of happiness, and therefore should be cultivated and promoted among human beings.

Sofocles' contribution to the topic was wisely studied by Freitag (1997) who analyzed his play *Antigona*. She demonstrates how artfully the playwright exposed the moral dilemma faced by the protagonist. Antigona transgresses the law in order to bury her dead brother, following the moral values and customs determined by her family traditions. Caught in this transgression, the king judged and condemned her to death. All facets of this moral tragedy are meticulously played out in Sofocles' plot, and thoroughly analyzed and discussed by Freitag (1997). After all, what would be the right thing to do? What sanctions, if any, should Antigona face for her transgressive action? Freitag's (1997) conclusion in terms of terminology is that when the protagonist follows her family values, she acts according to the domain of Morality (*mores*, in Latin), and does this in opposition to the social norms—instituted laws—of the city, in other words, against the rules of Ethics (*ethos*, in Greek). Freitag's arguments are strong, and follow Hegel's terminology

attributing *morality* to the personal (or family) level, and *ethics* to the institutionalized norms and rules of the society. This issue is relevant because many dilemmas display similar oppositional directions, which, instead of being a dichotomy, represent instead the inherent duality occurring whenever oppositional forces create motivational tensions. These tensions, consequently, demand innovative thinking and actions. Tensions among values are widespread. I will return to this subject later when proposing a tentative theoretical model to explain some aspects of the ontogenesis and psychological dynamics of human values.

Over the last three centuries, many philosophers and, more recently, sociologists, have dedicated their attention to the subject of values mostly addressing the dimension of ethics and morality. Even though the meaning of “values” from a psychological perspective also extends further away from morality and ethics (values referring to aesthetic, political preferences, human traits, etc.), usually the notion of values is impregnated with positive or negative valences such as good *versus* bad, right *versus* wrong. Among so many worth mentioning, Rousseau, Kant, Hegel, Weber, Parsons, and Durkheim stand out because of their seminal ideas.

However, for reasons of concision, this section will address three contemporary philosophers or social theorists who have inspired interesting thinking on the topic. They are Jurgen Habermas, Alasdair MacIntyre, and Charles Taylor.

Habermas (1991) developed a *communicative action* theory in which he elaborated on his discursive ethics from a dialogical, intersubjective viewpoint. For him, language and communication played a central role in evaluating different perspectives on the issue of ethics and morality, arguing for the encouragement of sociability, solidarity, and cooperation among interacting individuals. In other words, norms and values would arise from the dialogue among diverse perspectives, voices, and rational arguments put forth under a democratic social agreement. His ideas, although dialogical, remain in the domains of cognition, and do not refer to the power of emotions and motivation in the genetic processes

of values development. The issue of power relations among people, as well, was not explored by the philosopher.

Charles Taylor (1992) built on the subject of values and morality from a hermeneutic approach in philosophy. For him, meaning making resided at the center of human existence. Insisting on the topic of agency, humans should be conceived as self-interpreting beings. From his narrative approach to human experience, he alleged that individuals hold some ethical values to be worthier than others, and proposed a moral theory that transcends subjectivism. Following Aristotle, he admitted the existence of good, since people experience a kind of trans-subjective source of the good. Therefore, certain values are common to all human beings, and it is possible to infer for the existence of fundamental needs and values beyond those merely subjective or relative to cultural preferences. According to him, to conceive ethics as disengaged or neutral is unthinkable, for it should be seen as dialogical and encompass values such as tolerance, human rights, and democracy. He approaches the domain of psychology as he claims that one's sense of self and life itself depend on individual's values.

MacIntyre (2007) also defends the objective grounds from which ethics and moral values emerge. For him, social rules alone do not do the actual job of providing social norms, for the latter derive from substantive values. Values, on their turn, are not simply good because they are desired, but because they provide us with good (moral) reasons to be desired, whether or not one actually desires them. He argues that the moral dimension is the only way to make sense of the world, and that words and language, i.e., meanings, are necessarily moral because they are, in fact, value-terms. To the theorist, meanings emerge from social practices, and the reasons for people's actions are located in the moral order of such practices. In short, for MacIntyre, all psychological phenomena are at bottom normative and value-laden. This makes the study of values an essential endeavor for all social sciences.

After this brief reference to some of the philosophical roots of the concept, the following section focuses upon the ways psychology has

traditionally investigated the topic. After that, alternative theoretical accounts of the issue and possible perspectives for the future will be provided.

Values as Psychological Constructs: A Critical View on Cognitivist and Quantitative Approaches

Contributions to the study of human values in psychology come, in the main, from two different epistemological and theoretical traditions. The prevalent tradition permeates the literature of social psychology and essentially aims at the description and evaluation of the frequencies of pre-established value categories detected in different people and environments, according to a quantitative methodological approach. The other trend in psychology literature consists of the constructivist analysis of Jean Piaget and Lorenz Kohlberg, both developmental psychologists, whose theoretical ideas, inspired by the philosophy of Immanuel Kant (1788/1994), addressed the topic of moral development.

Social psychology literature referring to human values is impressively vast (Oyserman 2015). Well-known social psychologists as Rokeach (1973) and Schwartz (2012), among many others, have elaborated cognitively oriented theories and produced huge amounts of data concerning what kind of predetermined values categories were more frequent among certain individuals and groups. Making use of sophisticated statistical procedures, they came up with clusters of values that tend to show up together, or be in opposition to one another. With the recent advent of cross-cultural psychology, many researchers have carried out numerous empirical studies to compare those values categories that prevailed in different countries or social groups (Knafo et al. 2011). Data collected by such studies allowed some researchers, for example, to divide the world into those who are individualistic (axiological profile typical of Western industrialized societies) *versus* those who are collectivistic (typical of traditional, developing countries), to the point that Triandis (1995) anticipated a future clash of

civilizations due to such opposite cultural values. One of the major problems, though, is that most countries, in the contemporary world, are multicultural and heterogeneous, and assumptions about countries' or social groups' cultural homogeneity can be misleading. What is the point in comparing them, anyway? This tells nothing about how values emerge and develop.

Instead of reducing the phenomena associated to human values to a search for discrete, predetermined, fixed, and independent categories inferred from variations of Likert-type rating-scales, questionnaires and tests, why does psychological science not invest in the investigation of how values develop in specific cultural contexts, and what factors contribute to their ontogenesis? Why does psychological science take values for granted, and reduce such complex phenomena to a simple description of fixed categories? What we see instead is a large amount of effort but little actual explanation about those multilevel and interdependent factors, processes, and mechanisms influencing and promoting the emergence and development of specific human values in specific cultural contexts.

Piaget and Kohlberg, in their turn, were particularly interested in the moral development of human beings, which necessarily encompasses the development of values. In accordance with a constructivist cognitivist approach to psychology, both analyzed the processes of change occurring in children and adults' verbal judgments regarding moral dilemmas. Their analyses, though, considered specific stages of moral development. For Piaget (1994) children move from a stage—i.e., a specific structural cognitive mode of organization—of anomia (no rules) to a stage of heteronormia in which all moral principles come from authorities (parents, teachers). Then they move (or may not move) to a stage of autonomy, in which they judge for themselves if a certain action is right or wrong. Kohlberg (1984) expanded the number of stages (or substages) to six, the individual, hopefully, moving from a stage of hedonism to conventionalism to post-conventionalism. Even though Piaget and Kohlberg consider the active and constructive nature of human beings, the major limitation of their approach was to

dismiss the central role played by three important factors in the moral development of individuals, namely, social others, deeply affective motivations, and cultural contexts. The theoretical framework presented next highlights specifically these factors from a multilayered, systemic perspective.

Values and Culture: A Sociogenetic, Constructivist, and Systemic Approach

Cultural Psychology's view on the topic is systemic, sociogenetic, and dialogical. It also addresses the issue of values taking into account that psychology is, as Brinkmann (2009, 2011) proposes, a moral science. According to the author, "(1) we have a capacity for perceiving 'oughtness' as part of the world, (2) given that rules and norms order social life, there seems to be an inherent 'factual normativity' in our lives, (3) human functioning in general cannot be understood in value neutral terms, and (4) value-terms cannot be exorcised from our vocabulary, at least not from the part of our vocabulary that designates action, thinking, and feeling" (2009, p. 2).

The arguments presented by Brinkmann (2009, 2011) concerning the very nature of psychology are powerful and compatible with the views of both Taylor and MacIntyre. As human beings are inherently social (Maturana, Simmel), some basic moral values tend to be relatively universal (despite the oxymoron), meaning that, in different degrees or formats, they may be found in numerous cultures all over the world. In other words, even in cultures with diverse sociocultural configurations and actual practices social groups persist and develop, which points to general social norms of moral kind against, for instance, indiscriminate homicides, lies, and general practices of deception. From a Cultural Psychology perspective, it is possible to admit the existence of such basic moral guidance with diversified nuances, as well as acknowledge the fact that each culture holds dear many other different values, which generates a singular set of values orienting most of its social practices. Anthropological studies provide the scientific community with several source of evidence concerning both findings, indicating the existence

of diversity as well as the worldwide presence of some basic values necessary for the cohesion and continuity of the group. This issue is worth exploring further, but due to the scope of this entry, it is necessary to move to some possible venues for the investigation and theorization about the ontogenesis of values, focusing upon how they emerge and develop in different people and contexts.

As previously stated, values are general guiding principles for human conduct and are directly linked to the dimension of motivation. Valsiner, in his seminal book *Invitation to Cultural Psychology* (2014), proposed an Affective-Semiotic Regulatory Model of the *psyche* that helps to clarify the role of affective-semiosis processes in giving rise to hypergeneralized affective-semiotic fields that he qualifies as human values. According to the author, cultural psychology conceives human development and *psyche* as emerging from human interactions and permanent meaning-coconstructions that occur during social practices and communication. Consequently, affective-semiotic processes produced in cultural practices play a fundamental role in human psychology. Valsiner elaborated a hierarchical affective-semiotic regulatory model of human conduct that starts from a physiological level, up to the emergence of emotions (characterized by verbal labels), and all the way up to hypergeneralized fields located at a post-verbal level, which display the role of guiding the person's mind and actions. Values, and their counterpart—prejudices—consist of such hypergeneralized affective-semiotic fields guiding the individual's perceptions, interpretations, thoughts, feelings, and actions directed to self, social others, and the world at large. Even though powerful, the nature of values is fuzzy, not fixed, and, as they emerge from each person's experiences along life-trajectories, they can be multiple and contradictory. That is, they can integrate or oppose to other values generating tensions that can, eventually, be smoothed out by interpersonal and intrapersonal dialogues. Or else, tensions can create difficult and hurtful dilemmas for the person. It is worth mentioning, though, that tensions, possible dialogues, or

negotiations among opposing values often take place in the absence of individuals' awareness. This makes the struggle to face dilemmatic situations even more complicated. However, an important question remains: how values emerge in the first place?

As a child develops, certain personal goals—or goal-orientations—contribute to configure significant, special, affective-semiotic motivational fields that either weaken or become empowered as time goes by. The investigation of the pathways through which such processes take place, then, allows the researcher to unravel the routes taken by the ontogenesis of values, identifying those multiple factors operating as catalysts to give rise—or to lessen—specific fields instead of others. For instance, depending on the developing person's experiences of socio-affective relations in determined cultural contexts, certain affective-semiotic fields become progressively hypergeneralized and more powerful to motivate the person's actions in certain situations. Take for example the case of a child constantly reminded and praised—in her interactions with parents and peers—that looking good or beautiful is her best quality or virtue as a person. The odds of this child developing a significant semiotic-affective field related to “beauty” are relatively high (Roncancio-Moreno and Branco 2017). For sure, other factors—deriving from other experiences—may interfere, but there is an actual possibility for the child, in the future, to consider beautifulness as a value to pursue. Hence, if it is possible to explore and investigate how values and prejudices emerge along one's life experiences with significant social others, it is also possible to understand how to deconstruct prejudices and promote values changes. This would contribute to meaningful transformations to improve individuals' health and well-being, as well as to ameliorate or enhance the quality of life in our societies. As by now is evident, the perspective here adopted does not attempt to remain neutral, for it derives from an epistemological-theoretical framework that conceives psychology as a moral discipline.

Another key aspect of this approach is to bring to light the role of the imagined future in

configuring powerful values. Not only people's reconstructed memories of the past (Wagoner 2016), but especially their anticipations of the future, play a strong role in the emergence and development of their values. The perspective to attain or to reach certain significant goals in the future keeps the person motivated to feel, think, and act in ways that may facilitate such achievements (Branco and Oliveira-Silva 2019). As a result, values end up helping to configure specific I-self positionings that dialogue with each other within the context of the person's dialogical self (Hermans and Hermans-Konopka 2010) or dialogical self-system (Branco 2016). The reference to the dialogical self is appropriate to underscore the relevance of values in the *very* construction (coconstruction) of the human *psyche*.

New Venues for Research and Practices to Promote Moral and Democratic Values

In terms of research, the natural consequence of assuming a systemic, affective-semiotic cultural approach to values phenomena redirects investigative efforts toward a qualitative methodology, in order to unveil important aspects involved in the ontogenesis of values within specific cultural contexts. Moreover, since each individual's life trajectory is unique, it is necessary to invest in carrying out innovative forms of research to make sense of the general processes that participate of values ontogenesis. From the alternative perspective here presented, only processes can be generalized, for it is useless to search for universal tendencies or "mean" results (provided by statistics) that do not actually apply to specific cases. One possibility is to conduct longitudinal studies employing multiple, creative, and innovative methodological procedures so that all possible influencing factors can be identified and analyzed from a systemic approach. This is the only way to understand why family members or peers can be so different from each other even despite living in relative similar contexts, or sharing apparently similar experiences. Some research procedures

to investigate the ontogenesis of values can be interviews with subjects and relatives, filmed and direct observations in natural and semi-structured activities, focus groups, images production and interpretation, and so on. Microgenetic approaches also consist of a productive venue to knowledge construction about the subject under investigation (Abbey and Diriwachter 2008).

With reference to the construction and implementation of possible social practices, some reflexive thinking is particularly timely. Individualism has been traced in the history of ideas (Taylor 1992), and became progressively pervasive with the advance of modernity and globalization (Lash 1985; Sennett 2013). According to Kagitcibasi (2005), "the individualistic worldview tends to be seen as the norm and is exported to the rest of the world as the human model to emulate" (p. 405). The author alerts the reader to the dangers of excessive individualism and suggests that psychology has contributed to the exaltation of the individual, unencumbered by any loyalties to others. He argues that even from an evolutionary perspective, the survival value of cooperation and relatedness in humans exceeds that of individualism. To him, contemporary research reaffirms the value of relatedness in post-modern society. Therefore, the search for new venues to investigate and promote moral and democratic values in human societies consists of a possible and necessary endeavor.

The welcome consequence of assuming a developmental and cultural approach to values is, hence, the ability to construct and implement creative ways to foster social change at both individual and collective levels. By acknowledging the role of multiple interdependent factors in the ontogenesis of values, a systemic perspective allows for the development of more efficient efforts concerning social and psychological interventions to encourage or stimulate meaningful changes, by persons' actual engagement in cultural practices of collaborative and solidary kind. A promising context to do so is educational institutions. Aware of the mutual construction of cultural practices and values, educators, with the participation of the school community, can

introduce creative ways of promoting activities where affective-semiotic processes would mobilize reflectivity and the internalization of values of justice and care for the well-being of everyone. Instead of reproducing the prevalent values of individualism and competitiveness, relatedness, cooperation, justice, and solidarity would then become part of the new generations' life projects. This would open new venues for a permanent coconstruction of a better world, a world—following Aristotle's advice—worth living.

Summary

Within the realms of art, literature, and philosophy, values and beliefs held by individuals have always played a major role in making sense of human life. The struggle between right and wrong can be found everywhere, bringing about tensions between opposing values such as individualism, competition, cooperation, and solidarity. Psychology has approached the issue from two different but limited cognitive frameworks: a cross-cultural social psychology approach, which invests in simply measuring the occurrence of predetermined categories, and a constructivist perspective interested in the study of progressive stages of morality. In contrast, the cultural psychological approach provides theoretical and methodological resources to investigate the meanings and factors contributing to the ontogenesis of values, as well as resources to develop strategies to promote social changes according to the democratic and social values held dear by our civilization. In conclusion, the issue of values is complex, multifaceted, and has to be investigated and dealt with from an open, systemic, and interdisciplinary perspective. This seems to be the only way to promote the achievement of possible and welcome futures for humankind.

Cross-References

- [Complexity](#)
- [Dialogical Self Theory](#)
- [Participation](#)

- [Pedagogies of the Possible](#)
- [Social Change](#)
- [Wish](#)

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Virtual Communities

Paul R. Messinger¹, Kristen Smirnov² and Xin Ge³

¹Alberta School of Business, University of Alberta, Edmonton, Canada

²Department of Business Administration, Whittier College, Whittier, CA, U.S.A.

³School of Business, University of Northern British Columbia, Prince George, Canada

Abstract

The touchless economy of the pandemic era includes a network of virtual communities in which people participate as they conduct their everyday lives in a low-exposure-risk fashion. To help understand and put these communities in context, this entry describes a typology of virtual communities adapted from Porter (2004). The five elements of the proposed typology include (1) purpose (content of interaction), (2) population (participants in the interaction), (3) platform (design of interaction), (4) place (location of interaction), and (5) profit model (return on interaction). This five-element typology facilitates recognition of essential elements and differences between the many virtual communities that are becoming part of people's lives in the pandemic era and helps frame and put in context (a) likely new practices and technology applications and (b) new topics for future post-pandemic research in the social, business, and computing sciences.

Keywords

Platform interaction framework · Virtual communities · Online platforms · Touchless economy · Pandemic · Covid-19 · Typology · Sharing economy · Zoom meetings

Summary

An unexpected consequence of the Covid-19 pandemic has been the accelerated diffusion of virtual communities. What started in gaming, social media, virtual worlds, and e-commerce has been increasingly pushed into day-to-day business and education activities. Indeed, the everyday world has become increasingly virtual, and it is fair to say that most people reading this entry now live in a hybrid world – a blending of virtual and in-person interactions.

Globalization has long been argued to foster international trade, division of labor, specialization, efficiency, and economic growth (Smith, 2010), but now one must recognize that globalization also poses a challenge for public health. It is likely no coincidence that the outbreak of the Spanish Flu dovetailed with the end of World War I in 1918 – a time when international exchange of goods, ideas, and people reached a new height (Saunders-Hastings and Krewski, 2016; History.com, 2020; Wikipedia, 2020a,b).

A key mitigation measure involves replacing in-person interaction with virtual interaction in offices, factories, warehouses, schools, and even stores. This is made possible by the Internet and many new online platforms. Indeed, interaction in virtual communities is central to what has been called “the touchless economy” (Wu, 2020, p. 1):

The touchless economy comprises the economic activities that remain possible without close physical interaction between people: the online meeting, the live-streamed yoga session, the virtual conference, the drop-off delivery of groceries and other physical goods. As it stands, this is pretty much all the economy we've got.

To provide insight into the touchless economy, the current chapter adapts and extends C. Porter's (2004) typology of virtual communities. This typology has been previously applied to virtual

worlds (Messinger et al., 2008b). Our purpose is to extend this typology further to help understand, categorize, and formulate research questions about virtual communities critical to the touchless economy. In particular, we consider how this typology applies to a range of virtual communities that constitute the essence of the touchless economy, including (a) hybrid communities supported by virtual meetings (directed toward whatever goals a group maintains), (b) consumer and provider communities in the shared economy, (c) e-commerce, and (d) education, as well as (e) leisure activities, including social networking, gaming, and virtual worlds.

We argue for the relevance of this typology by showing how its five elements provide a framework for categorizing and understanding differences in the functioning of many kinds of growing virtual communities. We then describe how such virtual communities are playing pivotal roles in the touchless economy. We lastly argue that these five elements can help structure directions of inquiry into the *possible* – to help identify new applications and research questions. In this way, exploring the functionality of various virtual communities, organized according to this typology, is highly topical for an entry into the *Palgrave Encyclopedia of the Possible*.

Section 1 below describes key antecedents of virtual communities in the touchless economy. Section 2 advances our suggested typology of virtual communities. Section 3 uses the typology to help categorize and put in perspective key virtual communities in the touchless economy. Section 4 interprets the growth of virtual communities in the touchless economy in light of the dimensions of our typology. It also identifies directions for research in social, business, and computing sciences, and possible new applications and technologies. Section 5 concludes.

Antecedents of Virtual Communities in the Touchless Economy

“A virtual community,” according to Porter (2004), “is defined . . . as an aggregation of individuals or business partners who interact around a

shared interest, where the interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms.” Some of the earliest virtual communities began in small groups of interconnected computers in work environments and in gaming, then increasingly in social computing, and subsequently in day-to-day economic activities.

Gaming Early digital connectivity was carried out in small groups and Local Area Networks (LANs), where many terminals were connected by timesharing to a mainframe computer often for business applications (billing and ordering systems) and research computing. Digital connectivity also arose in arcade and home-released games, with platforms emerging such as the highly successful Nintendo Entertainment System.

Combining some of the functionality for gaming and social networking, Internet-supported gaming emerged both as discrete gameplay sessions with fixed beginnings and ends, and open-ended persistent virtual spaces – or “virtual worlds.” The earliest shared virtual worlds are sometimes overlooked because these Multi-User Dungeons, or MUDs, were worlds only encountered through text (Bartle, 2009). In the 1990s, graphics were added to the experience. The most commercially successful entrant in this genre was *World of Warcraft* (2004), for which over 100 million accounts had been made by 2014 (Sarkar, 2014). An essential feature of this genre, which became known as Massively Multiplayer Online Role-Playing Games (MMORPGs or MMOs), was that *shared* servers meant that everyone logged into a given virtual world server can see and interact with each other in real time.

Around the same time, there was also an interest in developing virtual worlds that were not steered by the rigid character archetypes and fixed plotlines of MMORPGs. Instead, these open virtual worlds centered upon self-directed exploration. *Second Life* is perhaps the best-known example of an open virtual world, where “there is no manufactured conflict, no set objective.” Participants can create and trade objects, elaborately customize the appearance of their

avatars, and shop with a local currency, the Linden dollar, convertible with US dollars (Kalning, 2007).

Gaming, when integrated with sites like Facebook, became deeply entangled with players' lives, as in the "casual" titles such as *Farmville* and *Candy Crush*. Augmented reality games subsequently emerged, such as *Pokémon Go* introduced in 2016, that integrated virtual objects, such as Pokémon creatures from the Nintendo series, with real settings such as a city street, a park, or the inside of a restaurant (Goldberg, 2016).

Business and Social Computing The Internet allowed for scalable social experiences without the need to share physical proximity or a dedicated line. As the Internet gained greater consumer acceptance and broadband access led to faster, always-on home connections, connectivity blossomed for business, social computing, and gaming. People could do their business computing at work or home and could connect via email and the World Wide Web to others both within and outside the company. People could now shop on e-commerce-enabled online retailers. People could also interact with each other in emergent social networks such as Facebook, Twitter, Instagram, etc.

The Sharing Economy A new set of virtual communities has grown around the sharing economy in the last few years. The key idea behind the sharing economy is that the service potential of various durable, intellectual, and other capital resources can be vastly expanded when these resources are shared, with compensation through online platforms, as compared to when the same could only be used by their owners or friends. The "sharing economy" includes ride-sharing (e.g., Uber, Lyft) and equipment/car rental (e.g., Quupe.com); hospitality, hotels, and accommodation (e.g., Airbnb); online media and content/media streaming (e.g., Spotify, Netflix); on-demand staffing (e.g., TaskRabbit); and crowd-based financing. Recent growth in these sharing economy spaces has been rapid. For example, the combined market value of Uber, Lyft, and Airbnb was around \$106 billion as of

July 2017 (Craggs 2017). "The sharing economy is set to reach 335 billion by 2025 ...; [it] will grow by a staggering 2133% in just 12 years; ... over 86 million Americans will use the sharing economy by 2021 [and] China's sharing economy is expected to grow 10-15% in 2021." (Petrov, 2021, p. 1).

The above narrative summarizes a selection of developments of various forms of virtual communities that have grown in the last three decades to which the typology, described next, applies.

Typology of Virtual Communities

This section considers a typology that promotes further understanding, study, and application of virtual communities in the touchless economy. Following Porter (2004), this typology has five elements. Messenger et al. (2008a) extend this typology to virtual worlds, gaming, and social networking. The current section builds on this latter paper, extending this typology to describe (a) virtual-meetings-supported communities, (b) the sharing economy, (c) e-commerce and brand communities, and (d) educational communities.

The five elements of the typology are as follows:

1. Purpose (content of interaction): At the heart of a virtual community is the purpose of interaction. The purpose specifies both the content and outcomes of interaction. The content consists of the specific type of information communicated in the virtual community. The outcomes can include shared information, entertainment, the facilitation of joint work or learning, or trading and commerce between participants.
2. Population (pattern of interaction): It is critical to consider distinguishing characteristics of the target user market. Characteristics of the population include the size of a group and the types of social ties.
3. Platform (design of interaction): The technology platform for a virtual community is central

to facilitating interaction: The design features of the platform influence the kinds of information shared, the kinds of activities engaged in, any decisions made, and any work done. A key element consists of whether communication is synchronous or asynchronous. Platforms can support connectivity through PCs on the Internet, mobile devices, and various forms of gaming devices.

4. Place (location of interaction): This element specifies whether the interaction is completely or only partially virtual (a hybrid community) and whether the participants are collocated or geographically dispersed. The countries, cities, or regions covered can shape the nature of interaction.
5. Profit Model (return on interaction): The profit or revenue model describes how the virtual community is financially sustainable. The form of revenue generation is potentially rich and diverse.

The logic of the typology is straightforward. A virtual community needs a reason for being – a **purpose** around which the participants interact. A virtual community must connect a **population of participants**, with an interest in the common purpose. A virtual community must have an online **platform** through which to interact, either using computers, smartphones, or gaming consoles, that also supports the functions of the intended purpose. And the virtual community will operate in a particular region, a **place**, which could be global, a country, a region or city, or a dedicated local network within a single building or campus. Lastly, there must be a **profit model** or revenue model to help cover the costs of maintaining the platform and paying for any tech and other jobs to keep the community running. Thus, by logical necessity, every virtual community is described by these five “P’s.” As noted by Messinger et al. (2008a, p. 11), “Indeed, the five elements (purpose, place, platform, population, profit model) focus on critical questions that journalists, marketers, and service providers are taught to ask: (1) For what purpose? (2) Who? (3) How? (4) Where? and (5) How much?”

Porter has argued that the five elements of this typology meet five criteria for a good typology, established by Hunt (1991). These criteria are as follows:

- (1) Is the phenomenon to be classified adequately specified? (2) Is the classification characteristic adequately specified? (3) Are the categories mutually exclusive? (4) Is the typology collectively exhaustive? (5) Is the typology useful? In this section, Criteria 1–4 will be used to assess the adequacy and strength of the proposed typology. The final criterion of usefulness is considered most vital in an evaluation of a typology (Hunt, 1991). [Porter, 2004]

The arguments for the first four criteria are not repeated in detail here, since the case has already been made in the context of virtual communities (Porter, 2004). (A brief case has been made earlier that every virtual community must be described by each of the “5 P’s.”) Instead, the next two sections consider the fifth criterion “Is the typology useful?” These sections suggest that the five-element typology is useful for (a) distinguishing, categorizing, and understanding the differences between various kinds of virtual communities, (b) interpreting the historical growth of virtual communities in the touchless economy in the context of the pandemic response, and (c) identifying future applications and research topics involving these kinds of virtual communities.

Categorizing Virtual Communities

There are a wide range of virtual communities covered by variation or differences in each of the five elements of the above typology (see Tables 1 and 2).

Purpose The earliest virtual communities shared information by posting messages and information about a topic to a board, with threads of conversation documented. But these have broadened in myriad ways, including social networking, e-commerce marketplaces, gaming and virtual worlds, the sharing economy, and multifaceted hybrid communities for business, education, and socializing supported by video conferencing and shared digital resources on the cloud.

Messinger et al., (2008a) notes that the purpose of the above typology can be used to apply to social networking, gaming, and virtual worlds (as noted in Table 1). For social networking/social media, the purpose is to disseminate information about oneself, be it text, images, video, or correspondence and messaging, either socially, professionally, or merely sharing information. For online gaming, the purpose is entertainment, and online games foster communities around shared strategic, tactical, and thematic gameplay. For virtual worlds, the purpose is social interaction in a rich virtual environment; the interaction can be completely open, or set in the context of a particular theme, possibly with an explicitly stated gaming objective.

This entry notes that the purpose element of this typology also applies to virtual-meetings-supported communities, educational communities, e-commerce, and the shared economy (see Table 2). (a) For virtual meetings, the purpose is synchronous audio and video communication, often in place of in-person meetings. This can be for business, social, or educational purposes. These communities form in a grassroots fashion, as needed. Often meetings are repeated. And the meetings are supported by a platform, which may be linked to larger ecosystems that include calendars and cloud resources for sharing digital objects and files. (b) In particular, for education, the purpose is learning. But the nature of the resources provided can be multifaceted, including synchronous virtual meetings, and asynchronous

Virtual Communities, Table 1 Typology applied to leisure-oriented virtual communities^a

	Purpose	Population	Platform	Place	Profit model
Games					
Undertale	Entertainment – thematic	One player	PC	Virtual	Fixed fee
Chess	Entertainment – strategic	Two players	Board game	Collocated	Fixed fee
Monopoly	Entertainment – thematic	2–6 players	Board game	Collocated	Fixed fee
Fortnite	Entertainment – tactical	Mass market	Synchronous PC	Virtual, dispersed	Free + extras
Online social networking sites					
LinkedIn	Business networking	Businesspeople	Asynchronous PC	Virtual, dispersed	Free + ads + extras
ArtStation	Themed networking	Creative industry	Asynchronous PC	Virtual, dispersed	Free + subs + extras
ChristianMingle	Themed networking	Religious singles	Asynchronous PC	Virtual, dispersed	Free + subs
Facebook	Social networking	Adults	Asynchronous PC and synchronous	Virtual, dispersed	Free + ads + extras
Virtual worlds					
Sinespace	Open interaction and escape	Mass market	Asynchronous PC	Virtual, dispersed	Free + extras
World of Warcraft	Content-focused play	Mass market	Asynchronous PC	Virtual, dispersed	Fixed fee + subs + extras
Grand Theft Auto Online	Content-focused play	Mass market	Asynchronous PC	Virtual, dispersed	Fixed fee + extras
Webkinz	Content-focused play	Children	Asynchronous PC and synchronous	Hybrid	Ancillaries + extras
Second Life	Open interaction	Mass market	Synchronous PC	Virtual, dispersed	Free + subs + extras

^aFrom Messinger et al. (2008a,b) typology of virtual worlds, with some updates. *Subs* Subscriptions, *Ads* Advertising, *Hybrid* Both collocated and dispersed. Builds on Porter (2004)

Virtual Communities, Table 2 Typology applied to virtual communities in the touchless economy^a

	Purpose	Population	Platform	Place	Profit model
<i>Virtual meetings</i>					
Zoom	Virtualize meetings	Small and large: Groups	Synchronous	Internet	Freemium + prosubscription
Skype	Videophone	2–4 People	Synchronous: part of Microsoft ecosystem	Internet and phone	Freemium + phone account
Google Meet/ Hangouts	Group meetings	2–4 People	Synchronous: part of Google ecosystem	Collocated	Fixed fee + Extras
WebEx	Business meetings	Business meetings	Synchronous	Dispersed	Fixed fee Schedule
<i>Education</i>					
Eclass	Education	Universities	Synchronous	Dispersed	Fixed fee + charge for number of users
Blackboard	Education	Universities	Synchronous	Dispersed	
Zoom based	Open	Diverse	Synchronous	Dispersed	Freemium + premium plans
<i>E-commerce</i>					
Amazon	Marketplace and eRetailer	General consumers	Asynchronous	Dispersed	Direct sales
eBay or Kajiji	Used market Places	General consumers	Asynchronous	Dispersed	Sales fees
Alibaba	Marketplace	General consumers	Asynchronous	Dispersed	Direct sales
WeChat	Socialization and payment	General consumers	Synchronous and asynchronous	Dispersed	Freemium + payment fees
Ele.me	Food delivery	Urban and suburban	Synchronous and asynchronous	Dispersed	Sales fees
<i>Sharing economy</i>					
Uber or Lyft	Rental service	Urban and suburban	Asynchronous	Dispersed	Direct sales
Airbnb	Rental access	Travelers	Asynchronous	Dispersed	Direct sales
TaskRabbit	Themed network	Freelance and business	Asynchronous	Dispersed	Sales fees

^aApplies Porter (2004) and Messinger (2008a) to the domains of the sharing economy, e-commerce, virtual education, and virtual business and social community meetings. Other important platforms, tailored to particular user segments, include Microsoft Teams, BlueJeans, Houseparty, and GoToMeeting.

provision of files, including lectures, readings, notes, and other digital learning objects, including breakout rooms. (c) For e-commerce, the purpose is buying and selling, and creating a virtual marketplace, which can include provision for delivery and service. (d) For the sharing economy, the purpose is to provide other people access to an asset, often through some form of service agreement or renting. This has the advantage of extending the usefulness of a durable good to many people (rather than keeping it in storage for a single owner to be used only occasionally).

Population (of participants/people/parties)

The population includes all members of the virtual community. The largest group, particularly for social networking, is the users. But for commercial virtual communities, providers of services and products are also very relevant. And in certain cases, the institution or company providing the marketplace is a separate participant. Different communities' participants are also typically characterized by age, gender, target-market, or content focus or can be open and/or have a mass market orientation.

Platform There are many types of platforms devoted to particular purposes being served by virtual communities. Different platforms apply for video conferencing, different forms of e-commerce, and sharing economy communities for ridesharing/ridehailing and online bed and breakfasts. This is a rich topic suited at the technical level to computing science, but with profound societal and business implications.

Place One might think of the place for social networking is global, and similarly the sharing ecosystem Airbnb is international, but ridesharing systems like Uber or Lyft are inherently applicable for particular cities where the system is present (and permitted to operate by municipal authorities). And even social computing is limited by language, and with imperfect translation functionality, social networking may apply differently to particular linguistic regions. This is an advantage for WeChat, as the largest social media platform in China with over a billion monthly active users (which many users call the “Chinese Facebook”) operating in China, and with strong functionality in Mandarin and English. Moreover, political restrictions can limit the place for a social community. For example, Google does not operate in China, after some disagreements between these two parties, and its apps do not apply there and so are substituted by local apps in China (e.g., Youku in place of Youtube). Also, the logistics of physical distribution, which may go with forms of e-commerce virtual communities, can influence the geographical extent of the Amazon ecosystem versus Alibaba’s Taobao ecosystem.

Profit Model This element of the typology can include whether participation in a community is supported through (1) a single purchase price or registration fee (i.e., fixed fee); (2) fee per use (i.e., variable fee); (3) subscription based (and on what basis subscriptions are made); (4) advertising based; (5) pay-as-you-go extras (virtual assets including clothing, land, and software); and (6) sale of ancillary products, such as real stuffed animals and accessories, which are accompanied by passwords for accounts in virtual worlds where virtual versions of the products enable combined

real and virtual play. Some free services, known as “freemiums,” or some base level of service is becoming expected by many community participants. The community may be supported in the background by some advertising-based system or analytics information-based market research service about user preferences and proclivities.

Of particular interest is that some of these virtual communities have their own dedicated currency. WeChat Pay and AliPay, which are supported at the consumer level by smartphone and QR code technology, are more widespread in China than credit card systems, or systems like PayPal or accounts on Amazon. Facebook is spearheading a consortium of western tech companies to create the Libra as a similar online currency. These currencies, and accounts for the associated companies, are particularly suited to facilitate the logistics of the profit model of the virtual community. There are great potentialities of related systems, such as cryptocurrencies (based on block-chain technology).

Overall, Table 1 provides a broad summary of how this typology can help to distinguish between leisure-oriented virtual communities in the areas of gaming, online social networks, and virtual worlds. Table 2 summarizes how this typology helps describe, categorize, and distinguish between communities in the workplace, education, e-commerce, and the sharing economy.

The next section demonstrates the usefulness of the typology to help interpret the historical growth of virtual communities in the touchless economy in the context of the pandemic response.

Virtual Communities and the Touchless Economy

The pandemic has served as a catalyst for the growth of many types of virtual communities that form the backbone of the touchless economy. Of course, people facing quarantine have increasingly turned to the types of virtual communities described in Table 1 for leisure activities, as a diversion (Harris, 2020). But perhaps more

importantly, the need to mitigate contagion in the essential activities of life led to the growing use of virtual communities for workspace interaction, education, and e-commerce (described in Table 2 above). The pandemic has also had a dampening effect on some elements of the previously growing sharing economy and other sectors of the economy. At least five points are relevant.

1. Video conferencing has replaced a multitude of workplace interactions with employees increasingly working from home (Lund et al. 2020). A byproduct of this is that many people are moving away from their previous homes in city centers (Patino et al. 2021).
2. The pandemic has stimulated virtual education at all levels ranging from elementary and secondary schools to universities. Also, communications at academic conferences and between businesses have been replaced by remote interactions.
3. The pandemic has promoted “low-touch” and challenged “high-touch” commerce and business. Amazon and other delivery services took on an increasingly important role (Wu 2020). At the same time, “airlines, retail stores and restaurants are among some of the industries heavily [negatively] impacted” (Chang, 2020), and, as a result, many traditional retailers went through bankruptcy (Sozzi, 2020; Wikipedia, 2020b). Generally, although the stock market reached new highs, there was a massive reconfiguration of business activity toward a touchless economy.
4. Other sectors have had to adapt. In particular, many parts of the shared economy faced many challenges, particularly ridesharing. Airbnb, after an initial decline, observed a changing pattern of usage toward people traveling by car to safe homestays (Serwer, 2020). Also, in the real estate sector, commercial real estate owners have received letters from their clients citing force majeure clauses and not paying lease or rent payments. “[W]e are worried about commercial real estate and commercial real estate REIT-structured companies,” said Tim Gilligan, a CFA and financial advisor for Wick Capital Partners in Philadelphia (Chang, 2020). And as for sports, the “Majority of Americans are not ready to go to a sports event, even with masks: poll” (Roberts 2020).
5. Political processes experienced widespread use of video-conferencing capabilities, including the switch to virtual meetings in the 2020 Democratic and Republican Conventions. Some changes may be permanent, such as the nationwide convention roll call-showcasing video from each state (Collinson, 2020). Voting itself became increasingly remote, which stimulated a debate about the potential for voter fraud versus undue restrictions on voting rights (www.cnn.com/2020/08/23/politics/trump-mail-in-voting-gop/index.html).

Before moving to the next topic, it is worth noting that some virtual communities have been developed to fight Covid-19 directly, as, for example, a shared database (Covid-19 Registry of Off-label & New Agents, or CORONA for short) that serves as “central repository of all available data in scientific journals on all the therapies used so far to curb the pandemic” (Prior 2020).

The next section uses the typology as an organizing principle for exploring future applications of virtual communities in various sectors and future research.

Future Applications and Research Topics

The five typology elements described in this chapter – purpose, platform, population, place, and profit model – provide guideposts for directions for the touchless economy in the areas of (1) likely new applications and technologies for medicine, e-commerce, education, and society at large, and (2) future research topics in the social, business, and computing sciences.

Application: medicine Medical care has changed for the pandemic, and these changes will likely be retained after the pandemic has ended. (Pertaining to purpose) Remote doctor visits will be increasingly facilitated by virtual meetings. (Pertaining to place) Some regions or countries may restrict

travel from citizens in high-incidence locales or have particular technology-supported entry requirements, and network applications could help with this. (Pertaining to platform functionalities) Improved sensing systems may facilitate remote medical testing analyzed digitally at home or mailed to laboratories. (Pertaining to population) Some virtual communities may help provide health information and lifestyle guidance for particular target segments including the elderly and people with special needs. (Pertaining to profit and reporting models) Networked medical applications, centralized government record-keeping, and virtual payment systems may help meet reporting requirements for various provincial, state, and federal health services, or for private health maintenance organizations, or to assist with billing logistics for private payments.

Applications: retailing distribution, manufacturing, entertainment, and e-commerce As retailing continues to pivot toward touchless modes of commerce, virtual communities are likely to serve new purposes and functions in a low-touch fashion to replace vulnerable high-touch areas of retailing and distribution. Concerning the *place* element, going out is increasingly being replaced by staying in for meals and entertainment. Thus, restaurants are increasingly emphasizing takeout or delivery. And Netflix was already disrupting more traditional forms of entertainment such as movie theaters before the pandemic, and this trend has only accelerated (Gaus 2020). At the same time, home improvement centers appear to be thriving, as consumers, relegated to their homes, have more time for home-improvement projects. Concerning the *platform* element, retailing and distribution are likely to increasingly employ agents with AI (artificial intelligence), robotics, and immersive environments with various forms of self-service to provide contagion-free contact in such industries as hotels, restaurants, and airline check-in. And concerning profit models, standard retail markups will likely apply, but payments will be increasingly virtual, with touchless checkout in the remaining physical stores using RFID tags on products. And payment

accounts may increasingly shift from cash and credit cards to new monetary forms like WeChat Pay and Alipay (both started in China), or the newly discussed Libra payment system being spearheaded by Apple.

Application: education In less than two months, the world's educational infrastructure, at all levels, took a crash course in offering teaching and learning environments online. Necessity has been the mother of invention, assisted by Zoom and various forms of educational software. Doubtless, the world's teachers, now becoming versed in these technologies, will retain many efficient new practices even after the pandemic. This prompts several questions about teaching pedagogies, accommodations for sports, inculcation of values of professionalism and good citizenship in noncampus settings, conducting exams fairly, willingness to pay for distance (vs. in-person) university education, and top-up health insurance coverage or hazard pay for teachers.

Application: society and government There may likely be a need to adjust government services, such as policies and design standards for public buildings and parks and new legal standards that outline permissible practices for the public and for businesses and new rules and guidance for governance. Of course, sustainable norms of behavior regarding public health are becoming applicable to citizens. But anonymity and the right to privacy will also be issues in the public domain (Warren and Brandeis 1890, Glancy 1979), as a curb to the use of AI systems with such things as facial recognition software.

The design of cities and the architecture of offices and homes are also likely to adjust because people are increasingly working from home, at least some days of the week. Central offices in city centers may not need to be so monolithic, with a more streamlined support staff, socially distanced. Architectural standards will increasingly recognize the need for highly effective ventilation and filtering, and modified use of elevators, adjustments in the structure of large

public spaces, and arrangements of homes that perhaps feature clusters of yards that afford safe small-group communal interaction. Homes themselves may be expected to include more office space in which to conduct remote meetings, possibly free from interruptions by other family members, effective ventilation, ample wireless service, and other support.

Research The five typology elements can also be helpful for organizing past research and for identifying gaps for new research. Table 3 provides a detailed list of research topics organized around the typology described in this entry. (This list builds on a related lists of potential research topics, as relating to virtual worlds, in Messinger et al., 2008a,b, 2009.)

This list raises a host of research and applications issues too lengthy to develop. Briefly, some likely research topics will consider, but certainly not be limited to, new arrangements for work and education, city planning, architecture, and virtual self-presentation, and changing norms of communication. In addition to these issues, other likely topics will include managing virtual communities, themselves; diffusion models of various types of virtual communities in the touchless economy, pairing artificial intelligence (AI) with virtual communities, AI readiness or aversion scales; and whether countries assert impediments to trade, information flow, and access to technology in the virtual realm (Wang & Disis, 2020).

Conclusion

In an Encyclopedia of the Possible, such as this entry, we believe virtual communities constitute a major topic because such communities open up efficient modes of human interaction and societal organization that can help us capitalize on as yet unrealized opportunities and respond to newly realized threats such as the Covid-19 pandemic.

This entry considers a typology for virtual communities consisting of (1) purpose, (2) population, (3) platform, (4) place, and (5) profit model. This typology is helpful for interpreting

how virtual communities make it possible for people to conduct their everyday lives in the touchless economy in a low-exposure-risk fashion. The typology of this entry is also offered to help interpret the future development (including new technological features) and application of virtual communities and to provide guideposts for research about the touchless economy in the social, business, and computing sciences.

One limitation of the typology discussed in this entry is that, as the world changes, other emergent features may become worth incorporating into it. Going forward, one central question concerns the enduring effect of the pandemic. Will all these accelerated changes carry forward after the pandemic or will the world revert the prepandemic era? Will this be true for norms of behavior (mask wearing, social distancing)? Will brick-and-mortar retailing bounce back? Will large-venue entertainment and sports resume? Will people's lives and required patterns of behavior be changed forever, or will we revert back to the golden age of public health of recent generations?

Paulina Paśławska states, "I believe that SARS-CoV-2 pandemic and Global Lockdown will push our digital transformation further and faster than we thought. Standing on the verge of an economic crisis we are highly motivated to transform. This motivation will push us to the next level of digital transformation and automation. 'Touchless economy' won't be the buzzword anymore, it will be the only economy we know" (Shataieva, 2020). A countervailing thought comes from Jacob Morgan, who concludes, "The touchless economy is for convenience, productivity, and efficiency but we must all remember that business still depends on human beings and relationships and that won't change" (Shataieva, 2020).

Overall, the touchless economy has been a needed response to the Covid-19 pandemic. The mainstay of the touchless economy is a mosaic of virtual communities that meet needs that were previously addressed by high-touch activities. The proposed typology of virtual communities helps organize one's thinking about the virtual communities that make up the touchless economy.

Virtual Communities, Table 3 Virtual Worlds (VWs): Open questions and related past work

Typology elements	Open questions for research and application	Some past work
Purpose	How will virtual communities be used after the pandemic? For medicine? For virtual workspaces? For education and distance learning? For running governments, for public consultation, and for elections? To facilitate collaborative design, market research, or test markets? Will virtual meetings in the workplace continue to replace in-person meetings? What are the implications for business? Are there downsides to video-conferencing? Will the downturn in high-touch areas like retailing, sports, large-venue entertainment, and restaurants have a lasting effect? Change: How will delivery of education change? Will growth of the sharing economy change? Which businesses will be the winners (e.g., Zoom and Amazon) and losers? Which brand communities will thrive? Why? Is there a new form of art emerging in the virtual world? What are best practices for managing virtual communities?	Qianqian et al., (2020), Kang et al., (2019), Messinger (2016, 2017), Goh et al., (2016), Driver et al., (2008), Bugeja, (2008), Graves, (2008), DiPaola et al., (2008), Rosenman et al., (2007), Boulos et al., (2007), Bronack et al., (2006), Dickey, (2005), Edwards, (2006), Maher et al., (2005), Nebolsky et al., (2003), Ragusa & Bochenek, (2001), and Roy & Kodkani, (1999)
Population/people	How are people's motivations and behavior patterns different in virtual communities than in physical environments (if at all)? Does increased interaction in virtual communities influence people's self-concept? Will people's attitudes toward self-presentation become more casual or remain the same? Will people use software to improve their appearance real time? How will people choose their virtual backgrounds and for what purpose? What are the demographics, psychographics, geographic characteristics, membership sizes, and participation levels of various virtual communities? What population segments are more or less amenable to using virtual communities? Does this affect media placement for business? Governance and public participation? What role do virtual communities play in elections and political movements (e.g., Black Lives Matter, Arab Spring)? Will growth in specialized information communities (and a possible decline of centrist mass media) lead to societal polarization? Will lack of personal contact have effects on mental health and feelings of alienation, depression, reactance, and backlash as a result of the touchless economy? If so, how should this be addressed?	Le and Duong, (2020), Messinger et al., (2019), Annett and Xu, (2015), Belk, (2013), Barnes, (2007), DMD et al., (2007), Edery, (2006), Hans et al., (2006), Hemp, (2006), Subrahmanyam et al., (2004) and Yee, (2006)
Platform	How can platforms be utilized for virtual service delivery, education, medicine, customer relationship management, electronic retailing, teaching, and libraries? What types of services	Pu et al., (2020), Wang et al., (2020), Yan, (2020), Hendaoui et al., (2008), Kim et al., (2008), Farkas, (2007), Goel & Mousavidin, (2007), Kadavasal et al., (2007), Swanson, (2007),

(continued)

Virtual Communities, Table 3 (continued)

Typology elements	Open questions for research and application	Some past work
	and products will thrive? What platform features will be particularly important and helpful? What pedagogies for teaching and learning will work best virtually? How will this depend on the students' ages and the material? How should the appearance of service agents or instructors be designed? How does the nature of a platform influence people's behavior? Do synchronous and asynchronous forms of interaction differ in meeting people's information needs, stimulating social interaction, or engendering trust? To what extent does lack of anonymity versus desire for privacy influence behavior? Are different platforms more or less conducive to self-governance? Can virtual communities be paired with artificial intelligence for management of the community or delivery of service? Are there measures/scales of AI readiness or aversion?	Hans et al., (2006), Holzwarth et al., (2006) and Sipress, (2006)
Place	Will people continue to increasingly work at home, with fewer in-person days at a workplace? What are the implications for cities and city planning? How will architecture of homes and offices evolve to accommodate increased use of virtual communities? Are the standards and norms of social behavior in virtual communities different from the physical world? Are there specific ethical considerations (e.g., privacy)? Etiquette? Attitudes toward cheating? Sexuality? Should virtual interactions be regulated (as compared to regulation of ISPs)? Will there be country-wide attempts to encourage or control virtual technology and AI? Will laws, regulation, and tax incentives influence creativity and productivity in virtual communities? Do behaviors and attitudes learned in virtual communities affect behaviors and attitudes in the real world? Do virtual communities influence attitudes toward violence, sexuality, and conservatism? What are the crossover effects between virtual e-commerce and traditional retailing and service delivery?	Hwang & Krackhardt, (2020), Wang and Disis, (2020), Messinger et al., (2019), Belk, (2013), Christ & Peele, (2008), Melby, (2008), Adrian, (2007), Cole and Griffiths, (2007a,b), Grabowski & Kruszewska, (2007), Hugues, (2007), Mennecke et al., (2007), Methenitis, (2007), Smyth, (2007), Yee and Bailenson, (2007), Yee et al., (2007), Balkin & Noveck, (2006), Herman, et al., (2006), Mayer-Schoenberger & Crowley, (2006), Nobel, (2006), Ondrejka, (2006), Jansz & Martens, (2005), Whang and Chang, (2004), Anderson and Bushman, (2001), and Sherry, (2001)
Profit model	Will virtual communities support themselves with a single up-front fee, periodic subscription payments, advertising, pay-as-you-go extras, or sales of ancillary products? How important are Freemiums for encouraging membership? Does the payment structure influence whether there is optimal provision of service? How is "optimal" defined? Can the incentive structure reduce the principle-agent problem? Are virtual profits taxable? By which governments?	Xu et al., (2020), Ardley & McIntosh, (2019), Setterstrom & Pearson, (2019), Fang et al., (2019), Li et al., (2019), Bapna et al., (2018), Park et al., (2018), MacInnes, (2006), and Leblebici et al., (1991)

Cross-References

- Archetypes
- Avatars
- Crealectic Intelligence
- Creativity
- Flow
- Insight
- Invention
- Narratives
- Participation
- Perspective
- Play
- Potential
- Risk
- Social Change
- Values
- Virtual Reality

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Virtual Reality

Giuseppe Riva

Applied Technology for Neuro-Psychology Lab,
IRCCS Istituto Auxologico Italiano, Milan, Italy
Department of Psychology, Università Cattolica
del Sacro Cuore, Largo Gemelli, Milan, Italy

Abstract

We will probably never go to the Moon, climb Mount Everest, or swim with dolphins. Virtual reality (VR), however, can allow us to do all these things using the simulative power of computers and smartphones. Specifically, what distinguishes VR from other media is the sense of *presence*: the feeling of “being there” inside the virtual experience produced by the technology. The feeling of presence, associated with the

high level of emotional engagement allowed by virtual experiences, turns this technology into a powerful tool for exploring what is possible and engaging with it, supporting personal and clinical change.

Keywords

Virtual reality · Presence · Telepresence · Emotional engagement · Personal change · Clinical change · Transformation of flow · Simulation

Definition

Avatar: virtual self-representations used in virtual reality and digital worlds.

Telepresence: the feeling of “being inside” a digital world.

Introduction

We will probably never go to the Moon, climb Mount Everest, or swim with dolphins. Virtual reality (VR), however, can allow us to do all these things using the simulative power of computers and smartphones.

What is VR? The word “virtual reality” is composed by the two words “virtual,” almost or nearly as described, and “reality,” the actual state of things. Consequently, we can state that the term “virtual reality” basically means “almost-reality” or “near-reality,” suggesting that VR is a form of reality simulation.

Computer sciences define VR as a set of fancy technologies used to create a simulated environment (Riva et al. 2015): an interactive 3D visualization system (a computer, a game console, or a smartphone) supported by one or more position trackers and a head-mounted display. The trackers sense the user’s movements and report them to the visualization system which updates the images for display in real time.

However, psychology and neuroscience define VR as (Schultheis and Rizzo 2001) “an advanced form of human-computer interface that allows the

user to interact with and become immersed in a computer-generated environment in a naturalistic fashion” (p. 82). From a cognitive viewpoint, VR is mainly a *subjective experience* that makes the user believe that he/she is there and that the experience is real (Riva et al. 2016). Specifically, what distinguishes VR from other media is the sense of *presence*: the feeling of “being there” inside the virtual experience produced by the technology. In fact, VR has also been described as an *advanced imaginal system*: an experiential form of imagery that is as effective as reality in inducing emotional responses (Vincelli et al. 2001).

In this view, the feeling of presence associated with the high level of emotional engagement allowed by VR (McLay et al. 2012; Rizzo et al. 2010) turns this technology into a powerful tool for exploring what is possible and engaging with it, supporting personal and clinical change (Riva et al. 2016). Specifically, VR helps people become aware of what is possible (an extended field of possibility), engage with what is possible (explore it), by creating digital experiences that test and expand human possibilities.

Virtual Reality and Personal Change

As suggested by psychology (Higginson and Mansell 2008), the process of change requires three critical steps:

1. First, it requires *self-reflectiveness*, an intense focus on the particular instance or experience creating the potential problem (Wolfe 2002). By exploring this experience as thoroughly as possible, the individual can relive and identify all of the significant elements associated with it (i.e., conceptual, emotional, motivational, and behavioral) and make them available for reorganization (Riva 2014).
2. Second, the process of change requires *personal efficacy* (Bandura 2006). Specifically, individuals must believe that they can effect changes through their actions. Without this strong belief, there is no incentive to act or to keep on acting in the face of difficulties.

3. Finally, the process of change can be dramatically boosted by *transformative experiences* (Mezirow 2000), forcing individuals to critically examine and eventually revise their core assumptions and beliefs. Unfortunately, most transformative experiences cannot be planned in advance, but they happen suddenly in individuals' lives, without a prior control on their contents and their effects.

VR is able to effectively support all these steps.

On one side, it provides the individual with a world where he/she can be placed and live a particular experience (Baños et al. 2005). As underlined by Glantz and colleagues:

One reason it is so difficult to get people to update their assumptions is that change often requires a prior step – recognizing the distinction between an assumption and a perception. Until revealed to be fallacious, assumptions constitute the world; they seem like perceptions, and as long as they do, they are resistant to change. (Glantz, Durlach, Barnett, & Aviles, 1997, p. 96)

By using VR, it is possible to develop new, realistic, credible, and informative experiences regarding the surrounding world. This could lead the individual to the realization that what it is assumed to be true is a result of his/her mind (Muratore et al. 2019). More, it allows a precise narrative framing of the experience. As underlined by Balzarotti and Ciceri (2014) positively framed experiences generate less fear than negatively framed ones.

On the other side, using VR, it is possible to develop “virtual adventures” in which subjects experience themselves as competent and efficacious (Riva et al. 2015). Specifically, the VR experience can provide different difficulty levels – from easy tasks to very difficult ones – offering a controlled setting in which the individual is able to develop new skills through trials and errors.

Finally, as recently suggested by Gaggioli (2015), VR also allows the possibility of simulating impossible worlds – environments that do not conform to the fundamental laws of logic and nature. For example, time paradoxes (i.e., the possibility of changing, restructuring the history) and time alterations are impossible manipulation

of physical reality that are instead feasible in virtual reality. We know that to change our world, we have to change our own thinking. In this view, the ability to see the world differently can create significant opportunities that can transform the way we approach the events of our life. In other words, this unique VR's characteristic can be exploited to induce transformative experiences (Chirico et al. 2016) that allow us to see the true threats and true opportunities without the limits of the way we make sense of the world.

These features clearly explain the increasing use of VR in behavioral health and its clinical efficacy. As demonstrated by two recent meta-reviews (Riva et al. 2016, 2019) assessing the meta-analyses, systematic and narrative reviews published in this field, the scientific literature supports the use of VR in the treatment of anxiety disorders, stress-related disorders, obesity and eating disorders, and pain management, showing also the presence of long-term effects that generalize to the real world.

However, another way for explaining VR's transformative potential can be found observing the similarities between the functioning of our brain and the functioning of VR.

Virtual Reality as a Simulative Technology

According to the “predictive coding” theory (Clark 2013; Friston 2010), our brain actively maintains an internal model (simulation) of the body and the space around it, which provides predictions about the expected sensory input and tries to minimize the amount of prediction errors (or surprise). We do not offer here an in-depth discussion of these concepts, because authoritative and thorough accounts have been provided elsewhere (Clark 2013; Friston 2010). However, herein we will focus on the concept of “simulation” introduced by this theory to better understand the links between our brain and virtual reality.

One of the main tenets of predictive coding is that our brain creates an embodied simulation of the body in the world to effectively regulate and

control it (Riva et al. 2019). The main characteristics of this simulation are two: first, it simulates sensory-motor experiences including visceral/autonomic (interoceptive), motor (proprioceptive), and sensory (e.g., visual, auditory) information and, second, the simulations reactivate multimodal neural networks which have produced before the simulated/expected effect.

Virtual reality works in a similar way (Riva et al. 2019). It uses computer technology to create a simulated world that individuals can manipulate and explore as if they were in it. Specifically, VR hardware tracks the motion of the user, while a software adjusts the images on the user's display to reflect the changes produced by the physical motion in the virtual world.

In other words, the VR experience tries to predict (simulate) the sensory consequences of our movements showing us the same scene we will see in the real world. To achieve this, the VR system, like the brain, maintains a model (simulation) of the body and the space around it. The reason why VR simulation tries to get as close as possible to brain simulation is that the more the VR simulation is like the brain model, the more individuals feel present in the VR world (Riva 2018; Riva et al. 2019; Sanchez-Vives and Slater 2005). And this is true also for social interactions with avatars, virtual self-representations in digital world. As demonstrated by Balzarotti and colleagues (Balzarotti et al. 2014), the more VR avatars are recognized as intentional agents, the more users adjust their emotion nonverbal behavior according to the behavior of the avatar.

Virtual Reality as an Embodied Technology

According to the “predictive coding” theory, our brain creates multiple multisensory simulations (Barrett 2017) and not only. Our brains allow the prediction of upcoming sensory events both inside and outside the body, which are also used to predict the best action to deal with the impending sensory events.

However, how are these multiple multisensory simulations handled by our brain? Moseley and

colleagues suggested that these simulations are integrated with real-time perceptive information in the “body matrix,” a coarse supramodal multisensory representation of the body and the space around it (Gallace and Spence 2014a; Moseley et al. 2012; Riva 2018). The mechanism used is the following. First, the contents of the body matrix are defined by top-down predictive signals, integrating the multisensory (motor and visceromotor) simulations of the causes of perceived sensory events (Friston et al. 2010). Then, the different simulations are ranked and included in the body matrix according to their relevance for the intentions of the self (selective attention). Finally, the priority and the content of the different simulations are corrected by bottom-up prediction errors that signal mismatches between actual and predicted real-time perceptive information (Friston 2009).

In this view, the contents of the body matrix are adjusted on the basis of the (dis)agreement (Riva et al. 2018; Talsma 2015) between the perceived sensory activity and the activity predicted through the different simulations which define the satisfaction conditions for the intentions of the individual. This process is bi-directional (Friston et al. 2010), i.e., the body matrix can be changed to accommodate unexpected sensory signals (perceptual inference and learning), and actions are performed to confirm the sensory predictions made by the body matrix according to the intentions of the individual (active inference).

This vision has also two corollaries.

First, this process also allows the body matrix to identify where the self is present, i.e., in the body that is processed by the body matrix as the most likely to be its one (Apps and Tsakiris 2014). Apps and Tsakiris clearly explain:

The mental representation of the physical properties of one's self are, therefore, also probabilistic. That is, one's own body is the one that has the highest probability of being ‘me,’ since other objects are probabilistically less likely to evoke the same sensory inputs. In short, the notion that there is a ‘self’ is the most parsimonious and accurate explanation for sensory inputs. (2014, p. 88)

Second, bodily representations are usually produced and modulated by sensory inputs, but they can exist and produce qualitatively rich bodily

experiences (Melzack 2005) even in the absence of any input signal (e.g., phantom limb syndrome). In this view, the experience of our bodily self can be considered the result of a multimodal simulation. Margaret Wilson stated in this regard that: “The human perceptual system incorporates an emulator. . . that is isomorphic to the human body. . . the emulator draws on body-schematic knowledge derived from the observer’s representation of his own body” (2006, p. 221).

As we have just seen, the sense of presence and the experience of our body (bodily self-consciousness) is the outcome of different embodied simulations. Moreover, VR is a simulation technology. In this view, it is possible to design specific virtual environments (Oliveira et al. 2016; Riva 2018) for altering the experience of the body.

Starting from these premises, in 2007, two European teams of cognitive neuroscientists independently reported in science how VR could be used for altering our bodily experience (producing an out-of-body experience) in healthy volunteers (Ehrsson 2007; Lenggenhager et al. 2007). Since then, the rapid development of immersive VR environments has allowed a new research line due to the possibility of “projecting” (and controlling) the body into external (or virtual) space that is becoming a reality (Costantini 2014; Gallace and Spence 2014b).

But how the experience of “being” in a synthetic body is achieved in these studies? These experiments are an evolution of the trick used in the low-tech rubber hand illusion (Tsakiris and Haggard 2005): the crossmodal congruence between what a person feels via the somatosensory pathways (touch) and what he/she sees in VR. Through this approach different authors used VR to induce an illusory perception of a fake limb (Slater et al. 2009) or a fake hand (Perez-Marcos et al. 2009) as part of our own body and to produce an out-of-body experience (Lenggenhager et al. 2007), by altering the normal association between touch and its visual correlate. It is even possible to generate a body transfer illusion (Slater et al. 2009). Slater and colleagues substituted the experience of male subjects’ own bodies with a life-sized virtual human female body. Interestingly, altering the experience of the

body has significant effects also on social cognition, for example, the experience of ownership over an a body of different race results in significant reductions of the levels of implicit bias against that race (Maister et al. 2015).

These studies suggest that VR can be defined as an “embodied technology” for its possibility of modifying the bodily experience (embodiment) of its users (Riva 2016, 2018; Riva et al. 2019). In general, it is possible to modify our bodily self-consciousness in three different ways (Riva 2016; Riva et al. 2012; Riva and Mantovani 2014; Waterworth and Waterworth 2014):

- *By replacing the contents of bodily self-consciousness with synthetic ones (Synthetic Embodiment):* As we have seen before, VR allows different type of synthetic bodily experiences. The most advanced is the “full body swapping” in which the individual’s body is substituted by a virtual body (Petkova and Ehrsson 2008). In other words, as in the movie *Being John Malkovich*, by using VR individuals can experience the perspective of another individual, seeing what the other sees, hearing what the other hears and touching what the other touches.
- *By structuring bodily self-consciousness through the focus and reorganization of its contents (Mindful Embodiment):* Individuals have different levels of body awareness, is the extent of sensitivity and attentiveness to bodily signals and sensations (Ginzburg et al. 2014). VR can be applied for improving body awareness when it is integrated with other technologies like biosensors. For example, in integration with biofeedback training, it can be used to assess and control specific body signals like heart rate, galvanic skin response, electromyography or electroencephalography (Gaggioli et al. 2014; Repetto et al. 2009) that are normally not consciously perceivable, and to report these back to the patient. The patient can then learn to shift these measured signals in the desired direction by means of the feedback provided by VR (i.e., a waterfall changes its flow according to the heart rate of the individual).

- *By augmenting bodily self-consciousness to achieve enhanced and extended experiences by altering/extending its boundaries (Augmented Embodiment):* By integrating VR with biosensors, stimulation and haptic devices, it is possible to map the contents of a sensory channel to a different one – e.g., vision to touch or to hearing – in order to increase its sensibility and replacing the impaired channels (Waterworth and Waterworth 2014). For example, Ward and Meijer (2010) virtual sound experience to convert information normally delivered to the visual field into an auditory representation. As noted by the authors, “The users both report detailed visual phenomenology that developed within months of immersive use and has continued to evolve over a period of years” (p. 492).

Virtual Reality as a Transformative Technology

Up to now VR has been used to simulate external reality in order to make people feel “real” something that is actually not really there (i.e., in the environment). However, the ability of VR to fool the predictive coding mechanisms that regulate the experience of the body also allows it to make people feel “real” what they know isn’t real. In other words, VR can offer new ways for structuring, augmenting, and/or replacing the experience of the body for clinical goals (Riva 2008, 2016; Riva et al. 2017).

Specifically, it is possible to use the simulative potential of VR for exploiting/enhancing (transformation of flow) and/or for correcting (embodied medicine) the embodied simulations used by the brain to drive perception, action, and emotions.

As underlined by positive psychology (Delle Fave et al. 2011), to cope with dramatic changes in daily life and to access new environmental opportunities for action, individuals may develop a strategy defined as transformation of flow (Riva et al. 2006): the ability of the subject to use an optimal experience for identifying and exploiting new and unexpected resources and sources of involvement. A specific optimal experience that is connected to transformation of flow is “awe”

(Bai et al. 2017; Guan et al. 2018). In fact, awe consists of two central features (Bai et al. 2017; Guan et al. 2018) which are needed for accommodation and perception of vastness; both of these can induce a significant reorganization of the predictive/simulative mechanisms of the brain:

- *Accommodation:* an update of the predictive coding to accommodate unexpected experiences (Bai et al. 2017; Guan et al. 2018).
- *Perception of vastness:* an update of the predictive coding to diminish the individual self, facilitating the integration into social collectives (Bai et al. 2017; Guan et al. 2018).

A clearer picture of the complex relationship among awe and brain activity was recently provided by a voxel-based morphometry (VBM) study. As demonstrated by Guan and colleagues (Guan et al. 2018), awe involves multiple brain regions associated with cognitive conflict control, attention, conscious self-regulation, and socio-emotional regulation, suggesting its potential role in adjusting/improving their functioning. Moreover, different studies demonstrated (Chirico et al. 2016, 2017; Quesnel and Riecke 2018) that both immersive videos and interactive VR can induce awe. In this view, VR inducing awe experiences may be used to induce “transformation of flow” (Gaggioli et al. 2013): a broad empowerment process within the flow experience induced by a high sense of presence. The proposed approach is the following: first, identify a possible experience that contains functional real-world demands; second, use VR to produce the experience and induce awe; and, third, allow the cultivation, by linking the awe experience to the actual experience of the subject (Riva et al. 2018). Different studies are providing a first support to the feasibility of this approach (Gaggioli et al. 2017).

Another approach, based on a similar rationale, consists in using VR to correct a dysfunction of the predictive coding mechanisms (Di Lernia et al. 2018a; Riva et al. 2017). Different authors (Riva 2018; Riva et al. 2017) recently suggested that an altered functioning of the predictive and simulative mechanisms of the brain might be the cause of different neurological and psychiatric conditions.

Therefore, it should be possible to compensate these deficits by using VR to modulate and/or integrate/replace the different contents of the body matrix (Riva 2018). Specifically, VR can be used to generate new crossmodal associations between bodily stimuli (e.g., for a male, being in a female body) that have not been experienced as systematically related before (Chen and Spence 2017). Moreover, the crossmodal association has to produce a *significant prediction error* (high surprise), reducing the level of estimation uncertainty, to update the predictive internal models of the body matrix through the generation of new priors (Riva et al. 2017). Using this approach, technology can be used:

1. *To facilitate the integration of external and inner body signals* (Azevedo et al. 2017; Suzuki et al. 2013).
2. *To induce a controlled mismatch between the predicted/dysfunctional content and the actual sensory input* (Serino et al. 2016).

The emerging fields of interoceptive feedback (Suzuki et al. 2013), sonoception – i.e., the use of sound and vibration to modify inner body signals (Azevedo et al. 2017; Riva et al. 2017) – and body illusion techniques (Costantini 2014), support the feasibility of this approach. For example, Di Lernia and colleagues developed an interoceptive stimulator that is both able to assess interoceptive time perception in clinical patients (Di Lernia et al. 2018b) and to enhance heart rate variability (the short-term vagally mediated component – rMSSD) through the modulation of the subjects' parasympathetic system (Di Lernia et al. 2018a). The integration of these technologies with VR in a multisensory simulative platform will allow the modulation of both the external and internal bodily information, to structure, augment, and/or replace the contents of our bodily self-consciousness (Riva et al. 2019).

Summary

Virtual reality (VR) is a new form of human-computer interface allowing the user to interact

naturalistically with and become immersed in a computer-generated environment. To change our world, we have to change our own thinking. In this view, the ability of VR of showing us possible worlds, sometimes radically different from our actual experiences, can create significant opportunities that can transform the way we approach the events of our life. In other words, this unique VR's characteristic can be exploited to induce transformative experiences that allow us to see the true threats and true opportunities without the limits of the way we make sense of the world. Specifically, VR helps people become aware of what is possible (an extended field of possibility), engage with what is possible (explore it), by creating digital experiences that test and expand human possibilities.

Conclusions

Probably we will never use a space rocket. However, virtual reality (VR) can easily allow us to experience it using the simulative power of computers and smartphones.

The term “virtual reality” is composed by the two words “virtual” – almost or nearly as described – and “reality,” suggesting that VR is a form of reality simulation.

This is achieved using a set of fancy technologies (Riva et al. 2015): an interactive 3D visualization system (a computer, a game console, or a smartphone) supported by one or more position trackers and a head-mounted display.

However, VR is also a new form of human-computer interface allowing the user to interact naturalistically with and become immersed in a computer-generated environment (Schultheis and Rizzo 2001).

We know that to change our world, we have to change our own thinking. In this view, the ability of VR of showing us possible worlds, sometimes radically different from our actual experiences, can create significant opportunities that can transform the way we approach the events of our life. In other words, this unique VR's characteristic can be exploited to induce transformative experiences (Chirico et al. 2016) that allow us to see the true

threats and true opportunities without the limits of the way we make sense of the world. Specifically, VR helps people become aware of what is possible (an extended field of possibility), engage with what is possible (explore it), by creating digital experiences that test and expand human possibilities.

In conclusion, even if VR had been already used in behavioral health obtaining effective results, the exploitation of the link between core brain process and the simulative potential of VR may be the core of a new transdisciplinary research field which uses VR to improve (transformation of flow) and correct (embodied medicine) the embodied simulations produced by the brain.

Cross-References

- Affordance
- Anticipation
- Anticipation Systems
- Awe
- Creativity
- Dreams
- Narratives
- Reality
- Simulation
- Virtual Reality

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Well-Being

► [Positive Psychology](#)

“What If” Thinking

Nicholas Rescher

Department of Philosophy, University of
Pittsburgh, Pittsburgh, PA, USA

Abstract

“What if?” is the doorway of speculative thinking. For as it matures, the human mind is not limited to factualities alone and truths and falsities are not the only objects of its consideration. We are the only objects of its consideration. We are in a position to consider situations we neither accept nor reject but simply regard as instructive possibilities. From the cognitive point of view we are amphibious creators, with minds that can adapt (be it correctly or not) the realm of the real but can also function in the realm of mere supposition.

Keywords

Assumptions · Conditionals · Hypotheses ·
Paradox · Suppositions

As it matures, the human mind is not limited to factualities alone and truths and falsities are not

the only objects of its consideration. We are the only objects of its consideration. We are in a position to consider situations we neither accept nor reject but simply regard as instructive possibilities. From the cognitive point of view, we are amphibious creators, with minds that can adapt (be it correctly or not) the realm of the real but can also function in the realm of mere supposition.

The speculative wonderment of “What if?” paves the way to the imperatively conditional: “If-then.” For the proper response to what-if questions is generally of the format if-then. (Question: “What if he misses the train?” Answer: “If he misses the train, he’ll miss the boat.”) And what makes such an answer correct is the linkage between its antecedent and its consequent, be it empirical and contingent as in the train/boat example or logico-acceptability necessary. (Question: “What if one of the five people present leaves?” Answer: “If one of the five people present leaves, then only four people will remain.”) Thus in answering a “what if” question by a response of the format “If - - then . . .,” we are looking to the consequences of that dash-indicated antecedent.

“What if” is the hallmark of supposition and of hypothetical reasoning. Such suppositions are matters of factual pretense, of cognitive play-acting: they state not actual facts but mere assumptions and hypothesis. Unlike assertions and postulations, the do not affirm what is or is taken to be so, but only what is taken provision-

ally and pro tem – not for purposes of affirmation and information but only for purposes of consideration and exploration. The response to "what if?" questions differ from "since-because" claims in that they suspend belief in the antecedent. Here the critical thing is mere supposition, a proceeding that dispenses with belief.

"What-if" thinking provides a vastly *versatile* instrument. In scientific context it is a guide to experimentation ("What if we X and Y at a high temperature?"), in everyday contexts a goal to planning ("What if a misfortune X were to occur, how could we protect ourselves against its consequences"); or it could be an instrument of criminal investigation ("If X committed a crime, what clues and indications might yet remain to show this?").

A key issue to address here is that of the semantical condition and status of the conditional antecedent. It must, of course, be *meaningful* otherwise we don't know what we are about. But it lies in the very nature of end hypotheticals that it need certainly not be *true*. Nor even need it even be something that is *possible*. There is virtually no limit to supposition. Beyond meaningfulness, assumptions are subject to no further restrictions. Not even logical self-consistency is required here, seeing that *ad absurdum* reasoning provides a clear counter-example.

As such, supposition is a resource of virtually unlimited scope. One can make suppositions about virtually anything – not just matters of conceivable fact, but also questions, injunctions, instructions, actions, problems. However, we shall here focus on fact-purporting suppositions on the order of: "Suppose that . . . were so, then - - ." And the affirmation at issue in the antecedent need not be an accepted truth. Its truth-status may be either false or unknown and problematic.

"What if" hypothesizing is a functional proceeding: meaningful supposition and assumption is a proceeding made for a purpose and many possibilities are at issue here:

- *Consequences-exploration*. Answering questions of the format: What would have to be the case if we stipulated that - - -. This in turn leads to two others.

- *Indirect proof* and *ad absurdum refutation*. Establishing that some thesis must be the case because the assumption of its negation would entail a contradiction or a vitiating infinite regress.
- *Dialectical refutation*. Indicting that some contention should be rejected (abandoned) because of untenable consequences.
- *Dialectical circumstances*. Indicted that some contention should be accepted because otherwise some acceptable facts would remain un- or under-explained. And this in turn Encompasses the following:
- *Thought experimentation* for versions of elucidation or exploration (especially in context of scientific understanding).

The sole cogent basis for rejecting inherently meaningful assumptions as illicit and inappropriate roots in their functionality: the nature of the supposition must not conflict with its purpose. For example, nothing is wrong with assumptions recognized and acknowledged as false – unless the purposed context is one of fact-explanation. Inherently meaningful assumptions face of further impediment then of factual suitability.

"What if" questions are notably common in historical speculations. A plausible example of this is the counterfactual:

If Wellington had lost at Waterloo, then Napoleon would not have been forced into (immediate) exile in St. Helena.

This admits of the following justificatory analysis:

Accepted facts:

- (1) Wellington did not lose at Waterloo
- (2) Wellington and Napoleon were opposed commanders at Waterloo
- (3) Napoleon went into (immediate) exile
- (4) Victorious commanders are not forced into immediate exile.

Assumption: not-(1): Wellington lost at Waterloo

In attempting to resolve consistency in such cases, the issue-formative assumptions are of course sacred. But even if we drop (1) in the

wake of the assumption, we still have a contradiction. For this assumption together with (2) entails "Napoleon won at Waterloo," so that "Napoleon was a victorious commander." And this together with (4) yields not-(3).

Given that (2) is not an issue here, our assumption of not-(1) in effect forces a choice between (3) and (4). And when we prioritize general relationships over particular facts – as is standard in counterfactual situations – we will retain (4) so that (3) must be sacrificed. And on this basis that initial counterfactual becomes validated.

Yet another plausible example of an informative historical counterfactual runs as follows:

If Julius Caesar had not crossed the Rubicon in revolt against the Roman republic, this republic would have endured far longer.

Here we have:

Accepted facts:

- (1) Caesar crossed the Rubicon in revolt against the Roman republic.
- (2) Caesar's revolt destabilized the republic and rendered it unstable and untenable.
- (3) Without this modality and conditionality the republic would have endured far longer.

Assume not-(1). Then by (2) Caesar's actions has not (would not have) rendered the republic unstable and untenable so that by (3) it would have endured longer. Here the conditional at issue follows simply from the hypothesis plus the limited register of salient facts.

As such illustrations indicate, restoring consistency in the case of counterfactuals envisions a priority ranking – a "prevailing order" of retainability that governs the process of breaking the chain of inconsistency at its weakest link. It is geared to the principle of fostering informativeness via the sequential prioritization of:

- issue-definitive hypotheses, suppositions, and assumptions
- definitive concept-conceptions and meaning-correlative relationships
- generalizations, "laws," well-established general rules, well-confirmed causal and factual relationships

- established trends, common relations among events, connections among particular eventuations
- specific, particular, contingent facts and concrete eventuations

Thus the priority situation in these *speculative* cases is exactly the reverse of the order of evidential security that obtains in the factual setting of *inductive* reasonings, where theory must give way to facts and more far-reaching theories to those that are more particular in their bearing. And in this regard specifically historical counterfactuals are in the same boat as others in that they pivot on considerations of rational economy via a Principle of the Conservation of Information that insists on optimizing our understanding of things in the face of incongruities.

Even patently false suppositions can thus be tenable in matters of counterfactual reasoning. Consider a simple example. We take ourselves to know that:

- (1) Bizet was French.
- (2) Verdi was Italian.
- (3) Compatriots belong to the same country. And now against this background let us make the supposition.
- (4) [Assume that] Bizet and Verdi were compatriots.

Obviously we now have a logical inconsistency on our hands. What to do? In the very logic of things, something has to give way: the chain of inconsistency must be broken. But where, when, and how?

To restore consistency we must clearly abandon one of (1)–(2). The other premisses are safe. In arising at this position the following priorities are in place:

- Thesis (4) is secure as the postulated assumption at issue.
- Thesis (3) is secure as a terminological definition.
- Thesis (3), albeit accepted truths, have comparatively lower priority than the preceding.

Accordingly one of (1) or (2) must be abandoned, but both have exactly the same claims to retention, we are led to the conditional:

If Bizet had Verdi had been compatriots, then either Bizet would have been Italian or Verdi would have been French.

As this example shows, a cogent line of reasoning leading to a clearly acceptable conclusion can result for a patently false and combination-generating supposition. By explanatory principles of cognitive damage control, instructive and informative cognitive work can be accomplished under the auspices of "what if" reasoning.

As this example illustrates, the task of rational deliberations and inquiry is to extract the maximal amount of useful information from the data at our disposal – to answer the questions we have in the most extensive yet reliable way that is possible.

A crucial difference is operative when new data are introduced by way of discovery (finding and observation) and by way of supposition (hypothesis and assumption). For in the former case if the data don't fit, it is they themselves that will need readjustment. But assumptions are sacrosanct. Other, preexisting materials have to be revised to make places for them. Reciprocal adjustments is the instrument of consistency in mandating either way. An optimal landscape of reciprocal accommodation has to be achieved one way or another. But the rational economy of its realization is accomplished on an agent.

Paradox analysis affords another illustration of this phenomenon.

Suppose we adopt the underlying principle at issue in the classic "Paradox of the Heap":

- If n sand-grains do not constitute a heap, neither do $n + 1$.

And in the wake of this supposition we are confronted with two further concepts:

One or two sand-grains do not constitute a heap.
A million sand-grans constitute a big heap.

It is clear that the sequential addition of sand-grains will engender a contradiction here, seeing that we realize full well that eventually a heap is

before us. So we arrive at the puzzle: "What if to a single grain of sand we keep adding more. Just when do we arrive as a heap?"

As noted above, the priority order of claims on retention in the face of counterfactual supposition runs as follows: (1) the assumptions and suppositions whose postulations are at issue, (2) definitions and terminological explanations, (3) general laws, rules, and principles, (4) speculative contingent factualities, and (5) plausibilities and probabilities. Such a hierarchy of epistemic-tenacity status obtains and serves to determine the weakest link at which to break the cycle of inconsistency that confactual suppositions engender.

And so, in the wake of these considerations we have no alternative but to reject that seemingly plausible addition principle in the face of more fundamental factualities. But of course the question "At just what point is the transition from non-heaps to heaps made?" is one that has no answer; it is inappropriate on grounds of resting as on mistaken presupposition. Transition there is and must be, but it is not punctiform. In this regard the question is based on the erroneous presuppositions of potential exactitude.

One useful and very common use of thought experimentation relates to its *explanatory* employment. We here reason along the lines of "If only such-and-such were the case, then something-or-other (which otherwise would be very difficult to explain) now admits of a ready and satisfying explanation." For example, Thales (sixth century B.C.), the very first of the nature philosophers of ancient Greece, proposed to explain the annual flooding of the Nile as the result of a backing up of its outflow due to the opposing force of the annually recurrent Etesian winds.

Overall, a proper thought experiment involves five stages overall: supposition, context specification, commitment adjustment, conclusion deriving, and lesson drawing. And at each of these stages a mishap or malfunction can in theory arise.

- The supposition can turn out to be meaningless.
- The context may be set up inappropriately, in relation to the purposes of the thought

experiment in particular by way of error of omission.

- The commitment adjustment may fail to be realistic, in particular by way of errors of omission that plunge matters into inconsistency.
- The course of reasoning by which the intended conclusion is drawn may be flawed and erroneous.
- The wrong lesson can be drawn for the experiment by overlooking possibilities for its interpretation.

In sum, all sorts of procedural flaws can in theory arise to vitiate a thought experiment.

Given that real experiments belong to the natural sciences, philosophers are greatly drawn to thought experiments. And so they are drawn to strange and eccentric hypotheses – suppositions on the order of brain transplants, communicating rocks, or intelligent amoebae.

However, philosophy's interests being largely theoretical and abstract, the standards of precision, generality, exactness, and the like that are used by philosophers have traditionally been far higher than those of the practical people concerned with everyday affairs. Accordingly, philosophers have generally looked upon language as imperfect and inadequate – in need of tidying up, clarification, and supplementation (if not outright replacement). But everyday concepts do not admit of this improvement without revision – and thus without abandonment. They are made for everyday use in real-world situations and cannot survive unaltered in the more stressful theoretical atmosphere of strongly hypothetical concerns. In projecting wildly fanciful hypotheses, philosophers bent on theoretical tidiness often end up annihilating the very concepts they are to clarify. Some conceptions are – like that of a "heap" – simply unable to survive the misguided attempt to instill them with exactness.

When thought experiments are projected in the context of ethical deliberations regarding personal behavior or social practices, one has to be mindful that the ethical norms of conduct are instrumentalities designed for use in the conditions and circumstances of this world's general and ordinary

course of things. The rules and regulations of ethics and morality are everyday guidelines designed to function in everyday circumstances and conditions. Accordingly, hypotheses that project extreme and altogether extra-ordinary conditions will not be relevantly serviceable for the task in hand. And this is not just because suppositions that contemplate considerations of extreme scarcity (e.g., killing one healthy individual to use his organs and body parts for saving many) are too outlandish and far-fetched for contemplation but because the course of their development has designed our ethical concepts and principles with very different sorts of situations in view. These far-fetched hypotheses in that specific deliberative setting are inappropriate and will be unable to meet the cognitive needs of the situation.

Like most any other tool or mechanism, if-then thinking is a productive resource brought into being for the realization of purposive aims. And all such resources are functionally limited. Instrumentalities and applications have to harmonize: one cannot sew with a hammer nor anneal with a needle. And if-then thinking, however useful in many contexts, cannot transcend the limits of meaningful application. Reasoning is by definition limited to the confines of rationality and cannot by its nature produce instructive information from nonsense. "If angels are dancing on the head of a pin, then how many of them could fit?" is a question which, if not exactly a meaningless is nevertheless a pointless one.

All in all, then, thought experimentation is open to various sorts of error. Thought experiments can err by relying on background information that is misinformation. They can involve errors of reasoning to arrive at conclusions that do not actually follow from the premisses at hand. They can address questions that rest on flawed presuppositions. Exactly because they are suppositions projected with a view to answering questions and resolving problems. Just this is why thought experiments can fail – just as real experiments can. They can do so by failing cogently to provide an answer to the question they are designed to resolve. Or else

they can provide the right answer to the wrong question.

Cross-References

- ▶ [Computer Science](#)
- ▶ [Creativity](#)
- ▶ [Hypothesis](#)
- ▶ [Imagination](#)
- ▶ [Thought Experiments](#)

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Wisdom

Mane Kara-Yakoubian¹, Amanda Rotella², Anna Dorfman³ and Igor Grossmann³

¹Department of Psychology, Ryerson University, Toronto, Ontario, Canada

²Department of Psychology, Kingston University, Kingston-upon-Thames, UK

³Department of Psychology, University of Waterloo, Waterloo, Canada

Abstract

Wisdom has been a central theme in the philosophical inquiry of the human experience for centuries, with the earliest written teachings dating back to the ancient Egyptian vizier, Ptahhotep 25-24 century BCE. The virtue of wisdom has been attributed to the great deities of various cultures and mythologies (e.g., Anahit of Armenia, Athena of Greece), and a quality humankind is encouraged to embody millennia later. In more recent decades, psychological scientists have begun to study the concept of wisdom, exploring characteristics of a wise person as well as meta-cognitive processes and moral aspirations involved in wise decision-making. At the core of wisdom is the recognition and acceptance that for any given issue there are different possible perspectives, interests, contexts, and outcomes, as well as the willingness to consider and take into account these different possibilities when working through the issue. This chapter reviews the psychological study of wisdom, with a focus on the conceptual and empirical construct of wisdom as it relates to *the possible*.

Keywords

Wisdom · Wise reasoning · Metacognition · Moral aspirations

Defining Wisdom

Greek philosophers viewed wisdom as a way of understanding the world (Durant 1961). To philosophers like Plato and Aristotle, wisdom was one of the most fundamental human virtues, a means of contemplating truth and guiding human conduct (Adler 1952). Though this perspective dominated Western philosophy for hundreds of years (Birren and Svensson 2005), the conceptualization of wisdom evolved throughout history, leading to numerous and culturally diverse definitions of wisdom (Kung and Grossmann 2020). This presented a challenge to its empirical study, because while the plurality provided rich roots for empirical investigation, it also created conceptual ambiguity among researchers regarding the components that comprise such a complex psychological construct, with different researchers prioritizing different philosophical accounts in their conceptualization of wisdom (Grossmann et al. 2020b).

In lay terms, wisdom has many definitions, ranging from knowledge drawn from traumatic life experiences and personal growth, to intelligence, and rationality (Staudinger and Glück 2011). Within psychology, some scholars have studied wisdom from a person-centric perspective (e.g., Ardelt 2003), while others have argued that wisdom can vary based on context (e.g., Grossmann et al. 2016; Grossmann et al. 2020a; Staudinger and Baltes 1996). Early psychological studies took a person-centric conceptualization of wisdom, where wisdom was characterized as a stable trait that an individual possessed (Birren and Svensson 2005). According to this account, people portray consistent and stable levels of wisdom across time and situations (e.g., “a wise or unwise person”; Webster 2007). In other words, wisdom is a trait that one either possesses or does not possess, reducing the notion of wisdom to (often) immutable characteristics of an individual. Recent empirical investigations take a broader approach. Although there is a moderate stability in people’s tendency to deploy wisdom in reasoning (e.g., metacognitive processes that lead to wisdom), there are also considerable within-

individual differences in how much people use wise reasoning, which varies according to context (Brienza et al. 2018; Grossmann et al. 2016, 2019a). Thus, the degree to which a person engages in wise reasoning can differ across time and situations, with certain contexts facilitating wisdom while other situations constrain it. For example, recent work has found that people use more wise reasoning when they are around others (Grossmann et al. 2016), when they take others’ perspectives (Kross and Grossmann 2012), or in relationships they care more about (Rotella and Grossmann in preparation).

To overcome the operationalization heterogeneity of wisdom in the social sciences (Staudinger and Glück 2011), leading scholars in this area of research established a common wisdom model (CWM), which includes moral, social, and cognitive approaches to wisdom, and provides a clear and overarching conceptualization of wisdom as a psychological construct (Grossmann et al. 2020b). The CWM is especially useful to understand wisdom from a social-sciences perspective. According to this model, wisdom is defined as “morally-grounded excellence in social-cognitive processing,” highlighting two elements which are most characteristic to the construct: *metacognition* and *moral aspirations* (Grossmann et al. 2020b). Metacognition refers to higher-order thinking; in other words, thinking about and regulating one’s thought-processes, cognitions, emotions, and motives (Dunlosky and Metcalfe 2008). In the context of wisdom, metacognitive processes allow people to step back from a situation (e.g., the problem they are considering at the moment) to assess, evaluate, and adapt their approach, taking into consideration things like “*what is my goal?*”, “*is the current approach working?*”, and “*what are the consequences of this approach?*” (Grossmann et al. 2020b). Though not an exclusive list, the CWM encompasses the following metacognitions as central to wise reasoning: (1) context-adaptability; (2) epistemic humility; (3) integration of diverse viewpoints; and (4) perspectivism. Context-adaptability involves recognizing that contexts can change, and maintaining an open mind about

such possible changes. It could present as searching for different solutions as a situation evolves, or considering alternative possible ways in which a situation could unfold (Grossmann 2017; Grossmann and Dorfman 2019). Epistemic humility involves recognizing the limits of one's knowledge. This can manifest as questioning whether one's existing opinion on an issue is correct, recognizing that one may be lacking relevant information, and actively searching for extraordinary circumstances prior to forming an opinion. Integration of diverse viewpoints involves searching for a compromise between competing perspectives and interests. This process can include identifying possible compromises, or searching for a solution that would bridge competing interests. Lastly, perspectivism involves maintaining an open mind toward the possibility that there are different viewpoints concerning a given situation. It could manifest as making an active effort to take others' perspectives, or seeking a variety of opinions on a matter prior to arriving at a conclusion.

The second foundation of the common wisdom model concerns moral aspirations, implying that wisdom meta-cognitions have to be morally grounded. The notion that these metacognitive processes are morally grounded means that wisdom guides individuals to make decisions that promote the common good and well-being of others (Grossmann 2017, 2020). The moral component of wisdom encompasses balancing self- and other-oriented interests, the pursuit of truth (vs. dishonesty), and an orientation toward shared humanity (i.e., recognizing we all share a common human experience regardless of group memberships; Grossmann et al. 2020b). Importantly, according to the CWM, wisdom-related metacognitive processes and moral aspirations work as a unit; these metacognitions *without* moral aspirations would be more descriptive of a sociopath than a wise person (Grossmann 2020; Sternberg 1998), as the fundamental reasoning processes of a sociopath would be focused on the self in isolation of others, rather than considering how one's actions are integrated into a broader context. Relatedly, moral aspirations without metacognition would simply be abstract

concepts that would be difficult to implement. For example, to effectively pursue the truth, one would need to engage in perspectivism (e.g., maintaining an open mind about different possible viewpoints) and intellectual humility (e.g., acknowledging the limits of their own knowledge).

Notably, wisdom as conceptualized by the CWM is not fully explained by other conceptually related constructs (Grossmann et al. 2020b). Wisdom is not merely intelligence: in examining the relationship between intelligence (IQ) and wisdom, scholars suggest that while a certain level of IQ is necessary for wisdom, in that it facilitates cognitive processes, it is not sufficient to achieve wisdom. Moreover, IQ does not consistently predict the moral aspects of wisdom and only weakly predicts performance on tasks assessing the various features of wisdom (e.g., Grossmann et al. 2020b). Wisdom is also distinct from rationality, with empirical work showing that wisdom and rationality share only a weak relation (Brienza et al. 2018). And though some scholars have suggested that wisdom and emotional intelligence (i.e., the ability to perceive, understand, express, manage, and use emotions; Mayer and Salovey 1997) are conceptually the same (Zacher et al. 2013), both lay perceptions of wisdom and wisdom scholars tend to contradict this suggestion (Grossmann et al. 2020b). In a study evaluating short statements associated with wisdom, participants perceived that wise people are equally capable of problem-solving and reasoning as intelligent people; however, wise people also had sagacity – which are interpersonal skills associated with knowing when to listen to others, having flexibility in interactions and relationships, and balancing long- and short-term consequences (Sternberg 1985). Moreover, in a recent survey among experts of the Wisdom Task Force which explore this idea, none of the experts viewed emotional intelligence alone as a sufficient factor for wisdom. That is not to say that emotional intelligence is unrelated to wisdom. In fact, many experts view emotional intelligence as a prerequisite for wisdom; however, they argue that these are two distinct constructs (Grossmann et al. 2020b). Similarly, most wisdom experts

identified perspective-taking (i.e., “the capacity to recognize and coordinate the differences in people’s perspectives,” Baltes and Staudinger 2000) to be a necessary component of wisdom, but not sufficient on its own to capture the entire wisdom construct (Grossmann et al. 2020b).

Wisdom and the Possible

Although wisdom is desirable across many contexts, it is particularly relevant in social relationships and social conflicts (Grossmann et al. 2020a; Grossmann and Dorfman 2019). While relationships are an integral part of the human experience, maintaining them requires effort. Interpersonal conflicts can arise, calling for one or both parties to keep an open mind, consider different possible solutions, and reach a compromise that maximizes both parties’ interests. In other words, one would need wisdom to effectively sustain relationships. Consider the following scenario:

A person at the department where I work is angry at me over something that isn’t my fault. It is actually another person’s fault for not communicating information with them. I feel stuck in the middle and like no one will take responsibility. I just tried to defend myself when the angry person came in and talked about the situation. I explained that the head supervisor had told me that they wanted to communicate with this person. I promised to avoid miscommunications in the future. I feel annoyed and attacked because it’s not my responsibility to play their office politics games.

Many of us can relate to a conflict similar to the one highlighted above. How might one deal with such a situation? Recall that wisdom involves taking others’ perspectives, placing a problem into a broader context, realizing the limits of one’s knowledge, and integrating these ideas (Grossmann 2017; 2020). By engaging in these metacognitive processes, people *interact with the possible* – that is, they deliberate about alternate possibilities, which would have otherwise been constrained without using wise reasoning processes. A person dealing with the above situation could entertain the possible by double-checking if their formed opinion of what occurred is in fact

correct. For example, is it true that this “other person” did not communicate the pertinent information? Are there extraordinary circumstances that could explain why this information was not passed on to the appropriate people? One might also consider taking the perspective of the others involved, prior to forming a conclusion about the given event. In a conflict such as this, wisdom would allow one to approach the situation with a focus on the “big picture” (Grossmann and Dorfman 2019; Grossmann et al. 2016), instead of concentrating on little details that could misconstrue the event or misjudge those involved. Deploying wisdom-related meta-cognitive considerations in such a conflict would facilitate the consideration of a variety of possibilities in terms of understanding what occurred and how the situation might further unfold.

In fact, wise reasoning has been related to many constructs that facilitate engagement with the possible. Wise reasoning has a moderate positive relationship to crystallized intelligence (e.g., Grossmann et al. 2013; Staudinger et al. 1997, 1998) which can allow people to relate current experiences to more accumulated knowledge, facts, and skills. Wisdom has also been related to personality constructs, where people who used more wisdom were also more open to experience, agreeable, and less neurotic (Brienza et al. 2018; Huynh et al. 2017; Kunzmann and Baltes 2003; Levenson et al. 2005; Mickler and Staudinger 2008; Webster et al. 2014). People who are more open to experience, have a larger active imagination, greater aesthetic sensitivity, are more attentive to feelings, have a preference for variety, and have greater intellectual curiosity (Costa and McCrae 1992), all of which are characteristics that allow people to engage in more experiences and possibilities. Agreeableness is a personality construct associated with being kind, sympathetic, cooperative, warm, and considerate (Costa and McCrae 1992), which also facilitates perspective taking and integrating perspectives – two wise characteristics that enable cognitive engagement with alternate possibilities. On the flipside, people who score high on neuroticism have greater anxiety, worry, fear, anger, frustration, envy, and loneliness, and are more likely to

interpret ordinary situations as threatening (Costa and McCrae 1992). These characteristics constrain engagement with alternative possibilities, and instead are associated with less cognitive flexibility (Murdock et al. 2013). Likewise, wise reasoning is associated with greater emotional diversity, emotional regulation (Grossmann et al. 2019a, b; Grossmann et al. 2016), and interest and inspiration (Kunzmann and Baltes 2003). Thus, wise reasoning is associated with cognitive and personality characteristics that enhance engagement with the possible.

Wisdom further facilitates engagement with the possible for large-scale and important social issues (Grossmann and Brienza 2018; Sternberg 1998). In recent years, we have seen the devastating consequences of climate change, observed terrorism in various parts of the world, and lived through a global pandemic. Circumstances such as these require us to deliberate on what is possible, in both considering how a situation may unfold and ways of resolving it. Wisdom facilitates this. For example, during a pandemic, nations would benefit from wise leadership (Grossmann and Dorfman 2019). This could look like national leaders maintaining an open mind of how the trend of positive cases may evolve throughout the year and searching for different solutions accordingly (context-adaptability). In fact, leadership learning has been associated with greater wisdom (Yang 2014). This could also include maintaining an open mind about the various viewpoints offered by experts in different fields (e.g., health, economics) and integrating these prior to making any decisions (perspectivism). Here, wise leadership could also manifest as acknowledging that one does not have all the answers and could be lacking relevant information (epistemic humility). As well, it could entail searching for a solution that maximizes the number of interests satisfied (e.g., for students, elders, business owners; integration of diverse viewpoints). As established previously, wisdom is rooted in morality; as such, wise leadership during a global pandemic could look like recognizing that all humans share a common fate regardless of their country of residence and thus collaborate internationally to discover a vaccine

(shared humanity). Wisdom in this context would enable leaders to consider the different possible ways in which the pandemic could evolve and the possible ways in which it would be best addressed.

In addition to identifying and considering different perspectives and possibilities, wisdom is also concerned with balance and integration. This component of wisdom is necessary to avoid infinite deliberation on possible alternatives. Integration of alternatives becomes particularly relevant in situations in which one must decide how to act. To illustrate this point, consider the ongoing COVID-19 pandemic. Government officials and their consultants do not have an infinite amount of time or resources to consider *all* of the ways in which it could unfold and develop mitigation strategies in accordance with each and every possibility. A delay in decision-making can have catastrophic consequences (e.g., thousands of preventable deaths). Faced with multiple alternatives in such a situation requires consideration of how to balance and integrate them.

Fostering Wisdom

Using wise reasoning has many benefits. Wisdom is associated with greater life satisfaction, greater longevity, less negative emotions, less depressive reflection, and can promote prosociality (Grossmann et al. 2013, 2017). Thus, to facilitate engagement with alternate possibilities, perspectives, and contexts – that is, to consider the possible – we must first understand how to facilitate and promote the use of wise reasoning.

Recent research suggests that self-distancing by taking a third person's perspective – i.e., considering a conflict as a distanced or uninvolved observer – facilitates wisdom (Dorfman et al. 2020; Kross and Ayduk 2011; Kross and Grossmann 2012). In a series of studies, Grossmann and Kross (2014) examined the role of self-distancing on wise reasoning. Participants were randomly assigned to reflect on a situation in which their partner cheated on them, or their best friend's partner cheated on their friend, and to reason about how the relationship would unfold

moving forward. They found that participants assigned to the “other” condition (i.e., thinking about their friend’s relationship) scored higher on wise reasoning, confirming that self-distancing from a situation can facilitate greater wisdom. In a follow-up study, an infidelity situation was presented once more. This time, participants were assigned to one of four condition, instructing them to either: (a) consider this to be their own problem from an immersed perspective (self-immersed), (b) consider this to be a friend’s problem from an immersed perspective (other-immersed), (c) consider this to be their own problem from a distanced perspective (self-distanced), or (d) consider this to be a friend’s problem from a distanced perspective (other-distanced). Self-distancing was manipulated via the use of first-person or third-person pronouns when reflecting on the conflict (e.g., “I am feeling. . .” vs. “She/he is feeling. . .”). The authors found that participants in the other-immersed and other-distanced conditions engaged in greater wise reasoning than those in the self-immersed condition. Further, participants in the *self-distanced* condition portrayed greater levels of wise reasoning than those in the self-immersed condition. Notably, those assigned to the other-distanced and other-immersed conditions did not differ from those assigned to the self-distanced condition in their wise reasoning, demonstrating that distancing of any manner (i.e., other-immersed, other-distanced, self-distanced), promotes similar levels of wise reasoning. In a third study, the researchers explored whether age plays a role in wisdom. Contrary to the popular belief that “with age comes wisdom,” they found no age differences in wise reasoning among younger or older adults, and further, that the self-distancing intervention worked equally effectively for both age groups. These findings confirm that no matter one’s age, taking the perspective of a distanced observer can inspire greater wise metacognitions, allowing one to explore the possible. This is consistent with similar research, such that perspective taking enhances creativity, and in turn, exploring what is possible (Glăveanu 2020).

Additionally, engaging in future-oriented perspectives can increase wise thinking. For

example, reframing how someone reflects on a situation (i.e., “*how would I feel about this in the future*” vs. “*how do I feel about this now*”) can help people approach conflicts more wisely (Huynh et al. 2016; Kross and Grossmann 2012; Robson 2019). Further, in the context of relationship conflict, creating temporal space between the self and situation can promote greater insight, greater forgiveness, and greater relationship well-being, while reducing partner blame and negative emotions about the relationship (Huynh et al. 2016).

Another effective method of self-distancing is the use of third-person language (i.e., “*What should she/he do about this?*” vs. “*What should I do about this?*”). Engaging in ego-decentering has shown to increase wise reasoning in hypothetical scenarios (Grossmann and Kross 2014; Kross and Grossmann 2012) and in autobiographical real-life experiences (Grossmann et al. 2019b). The use of third-person language was recently examined as a means to prospectively facilitate wisdom. In a recent micro-longitudinal study, participants wrote a daily diary entry over a 1-month span; they were instructed to record their reflections of a noteworthy daily experience using a first- or third-person perspective (Grossmann et al. *in press*). The researchers found significant increase in wise metacognitions in participants’ reflections on a recent personal social conflict after (vs. before) the third-person reflections intervention, a promising sign that one could implement a specific technique such as journaling using third-person language to promote wise reasoning when dealing with a new conflict. These findings suggest that reframing how someone thinks about a situation, problem, or conflict can promote greater wisdom and the exploration of various possibilities.

Conclusion

We have discussed the conceptualization of wisdom, highlighting that the metacognitions encompassed by the common wisdom model (i.e., context-adaptability, perspectivism, epistemic humility, and integration of diverse viewpoints) are

morally grounded, guiding individuals to make decisions that promote a common good. Importantly, we established that at the very core of wisdom is the recognition and acceptance of the possible, and reviewed empirical findings of how wisdom is associated with greater possibilities. Whether it is the consideration of different perspectives, viewpoints, interests, solutions, or outcomes when reflecting on a given situation, wisdom allows us to explore the possible.

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Wish

Vlad P. Glăveanu

School of Psychology, Dublin City University,
Dublin, Ireland

Centre for the Science of Learning and
Technology, University of Bergen, Bergen,
Norway

Abstract

This entry proposes a sociocultural approach to wishes and wish-making, distinct from existing psychoanalytical and cognitive discussions of this phenomenon. It considers wish-making as part and parcel of everyday life and one of the main ways we have to engage with the future and attempt to construct it according to our needs and desires. Wishes are not signs of intrinsic irrationality, nor markers of pathological functioning; instead,

they are embedded in human action and connect us to the possible, to others, and to the world. The entry starts by reviewing research into different types of wishes before considering in more detail theories and studies of wish-fulfilment and wishful thinking. It concludes with a reinterpretation of wishes as having their own scope, rationality, and as being intrinsically related to the ethical.

Keywords

Wish · Wish fulfilment · Wishful-thinking · Sociocultural psychology · Possibility

Synonyms

Desire; Wishful thinking

Wishes and wish-making are fundamental parts of a human type of existence, capturing something essential about our connection to the world not only as is, but as we would like it to be. Through the act of wishing, we express a human desire to make the world more hospitable, more appealing, to (re)organize it in ways that help us grow and flourish. Everyday language is filled with expressions related to wish-making and wish-fulfilment, including “do as you wish,” “having a wish list,” “your wish is my command,” “wishing someone well,” or “careful what you wish for.” The last one points to the fact that there is always a gap and a point of tension between the wish as imagined and formulated and the wish as real or enacted. The latter has sometimes more unexpected and far-reaching consequences than the former. The wisdom needed to choose one’s wishes well is a common theme in stories, from the legends of Greek and Roman antiquity (e.g., the myth of Pygmalion) to medieval and more modern tales (e.g., the story of Snow White or the tale of Aladdin). Wishing on a shooting star, when blowing the candles on a birthday cake, or tossing a coin into a fountain are all small, everyday gestures related to wish-making.

This is how, today, we have in different fields of psychological science a rich vocabulary related

to wishes, one that includes the interconnected notions of need, drive, impulse, instinct, resistance, motive, and so on (Ghent 2002). And yet, lay uses of the term are often overextended, making “I wish” become almost synonymous with “I want.” As such, different authors have been eager to note that wishes are not intentions (Heckhausen and Kuhl 1985), desires (Wellman and Woolley 1990), hopes (Miceli and Castelfranchi 2010) or, indeed, needs (Ghent 2002). This lack of clarity made especially those researchers following the behaviorist tradition determined to either specify wishes better (Watson 1916) or to replace altogether this notion (e.g., with “demand”; Seeman and Buck 1952). Even those working within the psychoanalytic orientation, whose conceptual system is premised partially on wishes and related concepts, expressed at times frustration with the term, proposing, for instance, to use instead the wider notion of “motivational systems” (Ghent 2002). These systems prepare the organism to adaptively respond to either appetitive or aversive stimulation, determining the course of learning (see Lang and Bradley 2010).

The difficulty in defining what a wish is comes partially from a series of misconceptions regarding their nature, in particular, the supposed dichotomies between wishes and reality, on the one hand, and wishes and reason, on the other. Wishful thinking, a topic that will be reviewed later on in this entry, is commonly assumed to distance us from reality, biasing our perceptions and leading us to potential errors in judgement. As George Orwell (1945) famously noted on the topic, people can foresee the future only when it coincides with their own wishes. But this doesn’t mean that wishes are actively disconnecting us from reality – on the contrary, they “grow” out of it and respond to it, being at all times in a close interplay (Babad et al. 1992). Related to this first misconception is the often-implicit idea that wishes are driven by emotion and, as such, frequently irrational. For example, the topic of infantile wishes and fantasy are widely studied within psychoanalysis (Eagle 1990), including the relation between wish-making and magical thinking (Vikan and Clausen 1993). All of these ultimately bring the topic of wishes close to that of pathology and pathological

functioning rather than “normal,” adaptive, and mundane acts.

This entry will strongly argue for the latter and against the former by proposing a sociocultural (rather than psychoanalytical) account of wishes. This account starts from the basic observation that wish-making is part and parcel of everyday life and one of the main ways we have to engage with the future and attempt to construct it according to our needs and desires. This is not an irrational or pathological type of activity, even when (as we will see), wishful thinking can indeed bias our perceptions and, at times, lead to deception or failure. Wishes dwell in the space between motives, emotions, and the imagination, as well as that between self and others. Indeed, as I will argue towards the end, while wish-making opens up a new horizon of possibility in our lives, this horizon is very much influenced by societal norms, cultural conventions, and power relations. In other words, what is experienced as a highly personal act of wish-making is, at once, a psychological and sociocultural activity. Wishes, I argue, are not as general as desires or needs and yet not as specific as intentions or goals. By occupying this “in-between” space, they both orient our thinking about a possible future and allow it to be flexible and, thus, to build futures rather than singular visions of what could or should be. Last but not least, wished futures tend to be more or less likely, sometimes very close to what is achievable, other times explicitly impossible (Miceli and Castelfranchi 2010). Either way, wish-making remains motivating for the person, infused by affect and forged within the (inter)actions that make up our social and cultural existence.

The entry starts with a brief review of types of wishes that are commonly studied in psychology and related disciplines, before discussing wish-fulfilment as the cornerstone of the psychoanalytic approach to dreams, motivation, and the functioning of the psychic. Wishful thinking is addressed next, an area of research informed much more by cognitive and neuroscience theories and methods and, therefore, “biased” towards discovering errors and biases in our (wishful) engagement with the world. I end by arguing that the latter should be considered as much

more than a sign of biased or irrational thinking and, drawing on Aristotle, show that wish-making is a social and ethical form of anticipating the future.

Wish Research

Over the past decades, there has been increasing research into wishes and wish-making, underpinned by various conceptual frameworks and covering a wider range of processes and domains. In this section, I will review three main areas studied by “wish researchers,” namely, development and the life course, mental-health, and society. It is important to note from the start, though, that oftentimes the notion of wish is used as a synonym for desire, need, or intention, and, as such, many of the papers reviewed below lack a proper reflection on the nature and functions of wishes beyond specific cases.

When it comes to human development, a variety of wishes are assumed to play an important part in our lives from birth to old age. As I briefly mentioned above, infantile wishes are an area of study in its own right, one we will return to in our next section. For the moment, we can focus on other wishes that have developmental effects, for example, the wishful identification of young children and teenagers with different role models. Konijn, Nije Bijvank, and Bushman (2007) considered the “darker” sides of these processes when they chose to study wishes and identification in relation to violent video games and their consequences for aggression in adolescent boys. Unsurprisingly, this study showed that subsequent acts of aggression were more intense for the boys who not only played violent games but wished to become like the characters they played. And this when game exposure, trait aggressiveness, and sensations seeking were controlled for. Remaining within the same general stage of development, Parker, Thoemmes, Duineveld, and Salmela-Aro (2015) studied the psychological and academic outcomes of wishing (or not) to take a gap year (i.e., a year of break or exploration between the end of school and university enrolment). Existing theories and research point, in this

context, to both positive and negative consequences of this practice. The study referred to, conducted in two different contexts (Finland and Australia), showed no differences between students who wished and didn't wish to take such a year in terms of a variety of outcomes (e.g., goal commitment, effort, expectations of attainment and strain, actual university enrolment, career prospects, life satisfaction). But it did interestingly show that gap-year students were more likely to drop out of a university degree.

Moving to the adult age, considerable research has focused, for some decades, on the wish for a child. For instance, Jeker, Micioni, Ruspa, Zeeb, and Campana (1988) examined this wish and its relation to infertility in the case of 116 couples. Starting from the assumption that infertile parents may present emotional conflicts when it comes to wishing to have a child, the authors carried out psychodynamic interviews and found, indeed, severe conflicts especially in female participants with no clinically defined organic infertility factors (a relationship less evident in their male partners). Another population under investigation is represented by undergraduate students who are feminists and their wish for a child. Gerson (1984) found, in this regard, that feminism was negatively related to the motivation for motherhood and made salient mostly the costs rather than benefits of parenthood. Of course, such results need to be placed in context, in view of society's changing conceptions of gender roles. Finally, another "adult" wish under investigations is that of continuing to work or stopping work, again in view of changing conceptions about the meaning of working. Harpaz (2002) found, in the Israeli context, that the vast majority of people expressed a wish to continue working even if they won a big lottery prize and that key factors in wishing not to work anymore were, among others, a strong instrumental orientation, low work centrality, organizational obligation, and low occupational satisfaction.

Finally, in old age what has been mostly investigated are wishes to move (especially their abandonment in forced immobility) and the wish to die. The former, explored in a research by Coulter (2013), showed that the risk of abandoning the

wish to move raises considerably with age, "suggesting that the well-documented residential rootedness of older people is not solely volitional" (p. 1944). In addition, it is not only age but ethnicity and income level that are strongly linked to fulfilling a moving wish. The wish to die or suicidal ideation is unfortunately common in people who get to a very old age. Barnow and Linden (2002) studied this phenomenon in a German sample and found co-occurrence with major depression or other psychiatric disorders, high age, being a woman, and negative life conditions (e.g., living in a nursing home and being unable to move out).

These studies connect well to the second main area of research – mental health. In this field, Tiggemann, Gardiner, and Slater (2000) explored the wish to be thinner in adolescent girls and concluded, based on focus groups, that sociocultural influences, especially the media, exert the strongest pressures to be thin. But, importantly, young girls also show an unexpected level of sophistication in how they understand the role of the media on body image and self-views. In other words, wishing to be thinner doesn't necessarily mean being dissatisfied with one's body, at least upon further reflection. Related to the above, dieting wishes have been researched by Johannessen, Oettingen, and Mayer (2012), who showed that mentally contrasting this wish with present reality and constraints promotes a commitment to feasible goals, while mentally indulging in a desired future does not (i.e., in the former condition, participants reported having eaten fewer calories overall and fewer high-calorie foods, as well as being more physically active). Thus, the need to account for present obstacles in order to better define our wishes and increase their chance of fulfilment.

Other mental health concerns relate to the wish to be held and the wish to die. The first one, studied by Stein and Sanfilipo (1985), is especially present in people with high levels of depression and in women. However, it is to be noted that both sexes reported such wishes but, if for women this wish is an invariant across levels of depression, only males who described themselves as more depressed (than other males) expressed

feelings of dependency and, as a consequence, a more intense wish to be held. Finally, the wish to live and to die has been mainly studied in cases of suicide. Brown, Steer, Henriques, and Beck (2005) discussed these two wishes as engaging in an internal struggle whose outcomes have a determining effect when it comes to suicidal behavior. And yet, having such an internal struggle relates already to lower suicidal intent scores than a unidirectional drive towards death alone (see Kovacs and Beck 1977), showing the importance of a heterogeneous motivational stance.

Last but not least, most research on wish-making and society relates to votes, politics, and the prediction of election outcomes (a topic we will return to in the section on wishful thinking). To give just one example, Babad and Yacobos (1993) focused on wishful thinking in Israeli voters in the 1988 election and showed substantial effects of this phenomenon. Ultimately, predictions of election outcomes as well as the interpretation of events depended greatly on political wishes and preferences. At the same time, political allegiance did nuance the intensity of wishful thinking, suggesting again that community and identity variables play a role in what and how we wish for, including in politics. And this holds also for those wishes that go counter to expectation. For instance, Leshem (2017) studied the wish for peace in an intractable conflict like the Israeli-Palestinian one. Focusing only on the Jewish-Israeli side, he found that, while hopes for peace are low but found across different definitions of peace, wishes for peace are more dynamic, higher and, for right-wingers, dependent on what kind of peace was proposed (the most concrete definition, the less right-wingers wished for it). Wishes, ultimately, are both shaped by and continuously shape one's political orientation.

Wish-Fulfilment

The topic of wish-fulfilment deserves its own separate section given, on the one hand, its old historical roots (arguably it marks some of the first scientific studies of wishes) and, on the other, the distinct theoretical underpinning of these studies.

If the research referred to above draws on multiple conceptual frameworks, from clinical and individual differences to social and political, wish-fulfilment is firmly grounded in psychoanalytic or psychodynamic thinking. This field has its origin in Freud's famous study of dreams and his assumptions that dreams – one of the “royal” ways to our unconscious – are a form of wish-fulfilment. In his words, “the content of the dream is thus the fulfilment of a wish; its motive is a wish” (Freud 1900, p. 20). According to Freud, this is easier to recognize in the case of some dreams that directly respond to a wish we remember when aware, and more difficult for others, especially anxiety-dreams. And yet, the latter are some of the most fruitful ones for a psychoanalyst given that “there is always the possibility that even our painful and terrifying dreams may, upon interpretation, prove to be wish-fulfilments” (p. 33). As such, a painful or terrifying dream, instead of invalidating the hypothesis of wish-fulfilment, makes us wonder even more as to what kind of wish is being met by feeling sad or frightened. “Wherever a wish-fulfilment is unrecognisable and disguised there must be present a tendency to defend oneself against this wish, and in consequence of this defence the wish is unable to express itself save in a distorted form” (p. 37). In fact, for Freud, dreams play two main roles. Because of the hallucinatory fulfilment of oftentimes unconscious wishes, they provide our psychic a “safety valve,” discharging instinctual energies. And, because they also preserve our desire to sleep by transforming sleep disturbing stimuli, dreams are equally the guardians of sleep.

Freud intuited from 1900 that children's dreams, often simpler, give the best examples of wish-fulfilment, an assumption that received empirical support more than a century later in studies such as the one performed by Colace (2013). He traced not only the frequency and types of wish-fulfilment in the dreams of young children but also the daytime experiences these dreams most probably referred to. The findings clearly show that children's dreams most often fulfil a recent, daytime wish, especially when associated with an intense affective state. In fact,

dreams seemed to resolve the tense affective state, something that Colace formulated as the “affective-reestablishment hypothesis.” Combining psychoanalytic insight with neuroscience research pointed to greater activity during dreaming in areas of the brain involved in the reactivation of affective components and memories. As such, dreams and the wishes embedded within them dissipate the emotional charge accumulated during daytime and reduce next-day subjective emotionality. According to Colace:

Through the elaboration of daytime affective experience, the dream allows the child to obtain emotional restoration and to continue sleeping undisturbed. In other words, wish-fulfillment dreams resolve an affective state and provide ‘affective reestablishment.’ In accordance with this interpretation, we note that the children often appeared calm and serene while reporting these wish-fulfillment dreams. (p. 167)

Just to note before the end that wish-fulfilment research doesn’t only relate to dreams or draw on Freudian notions. There is another strand of studies that considers the actual fulfilment of wishes and its role, especially the wishes of children with life-threatening illnesses who are made true by parents or charities (see Ewing 2009; Darlington et al. 2013; Galinsky 2014). These studies point to an interesting set of findings, for example, the fact that the fulfilment of a special wish might provide the child with a sense of the future and can ease suffering and sorrow both for the child and the family (especially when receiving support by professionals, given that the wish also signifies the seriousness of the illness). Overall, these studies indicate the importance of empathy and of nurturing dreams and hopes in those who suffer. But is such wishful kind of thinking always positive?

Wishful Thinking

Wishful thinking is perhaps the topic that has been studied most extensively, at least within the cognitive tradition. In simple terms, it designates “a desirability effect as the inflation of the judged probability of desirable events or the diminution of the judged probability of undesirable events”

(Bar-Hillel and Budescu 1995, p. 71). Even more briefly, it is “people’s tendency to believe what they wish to be true” (Trope et al. 1997, p. 105). Different authors tried to specify this concept further, by distinguishing it from motivated reasoning (Krizan and Windschitl 2009) and self-deception (Szabados 1973). When it comes to being overly optimistic, Vosgerau (2010) clarifies that wishful thinking refers to overoptimism about future events that are unrelated to the person’s performance (in contrast to what we call overconfidence). In any case, it is widely assumed that wishful thinking encompasses a broad range of phenomena and that, while it participates in some forms of pathology, it is certainly not limited to the mentally ill (Trope et al. 1997). In fact, for some, all thinking is wishful thinking (Kruglanski et al. 2020), by which they mean that all thinking is motivated, while others see it as more restricted in scope, arguing that people can be both overly optimistic and pessimistic about the future (Vosgerau 2010).

One of the typical assumptions of a cognitive approach to wishes and wishful thinking is that they can easily bias us, inclining individuals to wrongly estimate the likelihood of a desired future, i.e., overestimate the probability of favorable outcomes and underestimate the one of unfavorable outcomes. In this way, an association is made between wishful thinking and irrationality or, at the very least, the assumption is raised that wish-making can distort reality. However, not everyone supports this view; for instance, Neuman, Rafferty, and Griffiths (2014) make the point that, actually wishful thinking can help us sometimes make better decisions, especially when we have limited cognitive resources to evaluate the future. Through simulations of decision-making processes, they demonstrate how including a bias towards wishful thinking can lead to better performance across a range of decision-making environments. This is because, in fact, calculating the probabilities of everything that is possible is computationally intractable and wishful thinking compensates for this. Such an outcome, of course, depends on time and resource

constraints. “As the horizon that the agent can consider increases, the gain for an optimistic policy decreases, and optimism eventually becomes detrimental to performance” (p. 1214). Overall, though, instead of an error, wishful thinking seems more to be an adaptive strategy we all use, at least once in a while.

How does this “strategy” develop? Vikan and Clausen (1993), based on previous research, assumed that children between the ages of 4 and 6 believe that people can be controlled either by wishful thinking or magic, on the one hand, and more realistic means (like rewards and punishments) on the other. What they found in their study is that magical behavior was considered more efficient than wishing, and that emotion could influence more than thinking. This is, once more, seen as a bias leading to inaccurate conclusions. For instance, it is known that preschoolers typically overestimate their own performance across a wide range of tasks. Schneider (1998) showed that, actually, overpredictions are rather due to wishful thinking than poor metacognition, and that they were more frequent for unfamiliar compared to familiar tasks. Research on adults is even wider in scope. Gordon, Franklin, and Beck (2005), for example, demonstrated a relation between wishful thinking and memory in that people have a bias to attribute desirable predictions to reliable sources and undesirable ones to unreliable sources. Also, that wishful thinking effects depend on retrieval processes and that wishes concerning one event can produce a source memory error for others. Similar effects have been found in social research, for instance, where the likelihood of in-group members to be better in a competition is judged higher than the likelihood of competitors (Price 2000). Finally, there is as well some neuroscience research into wishful thinking, “locating” it in the activity comprising parts of the left inferior occipital and fusiform gyri cluster with functional connectivities of this cluster with the human reward system (Aue et al. 2012). This MRI study asked participants to predict the likelihood of their favorite and least favorite team winning a football game.

In terms of domains, wishful thinking has been documented in a variety of fields, oftentimes with problematic effects. Seybert and Bloomfield (2009) documented wishful betting in financial markets, within a laboratory setting. They also showed that market interaction increases rather than decrease wishful thinking, leading often to contagion. Babad and Katz (1991) had already evidenced that favorable outcomes are considered more likely for preferred teams, for example, in soccer stadiums and at betting stations (see also Babad 1987). Moreover, explicit instructions to be objective did not reduce wishful thinking, fans often betting emotionally and against their financial interest. Elections have also been researched in view of the same phenomenon, and findings here show that, indeed, there is a strong link between preference (wish) and expectation (prediction) (see Uhlener and Grofman 1986; Babad et al. 1992; Babad 1997; Krizan et al. 2010). Once more, this was often maintained even when the instruction to be as objective as possible was formulated and when financial rewards were promised for an accurate prediction. More mundane phenomena, such as procrastination, seem to be related to wishful thinking as well. Wishful thinkers procrastinated when expecting an unpleasant, but not a pleasant task, while low wishful thinkers did not procrastinate (Sigall et al. 2000).

Wishes and Possibility

Regardless of the fact that psychoanalytic and cognitive approaches are highly distinct from each other, they do seem to converge when it comes to specific assumptions about wishes and wish-making. In both literatures, wish fulfilment and wishful thinking seem to be driven by irrational rather than rational forces. However, while psychoanalysis sees wish fulfilment, including through dreams, as part of “normal” functioning, cognitivists are by and large inclined to consider wishful thinking a bias that leads to inaccuracies and errors.

The sociocultural account proposed at the start rejects both the irrationality of wish-making and its relation to errors. While it might well be the case that, in specific contexts, wishful thinking doesn't help us predict outcomes realistically, this doesn't mean that its function is to mislead us. Instead of dichotomizing our understanding of wishes along the lines of reality – fantasy, normality – pathology, and accuracy – error, it would be more useful to return to the core of what wishes “accomplish,” which is to relate us to the future and to the possible. And this engagement is never reduced to thinking processes or emotional reactions alone. It is part and parcel of our actions in and on the world, and the outcomes we envision for such actions. Aristotle, in his *Nicomachean Ethics*, addressed this issue when he related human action to choice, deliberation, and wish (see Mele 1984). For him, the origin of action is choice and choice, in turn, depends on desire (wish) and on reasoning with a view to an end (deliberation). While choice and deliberation received considerable attention in commentaries on Aristotelian ethics, wishing has not. Mele (1984) considers this a serious shortcoming, given that wishes relate to autonomy, a property that is essential for any theory of human action. Even more important, for Aristotle, wishing was related to rationality and goodness given that “we wish only for that we think to be good” and that “wish is the only form of desire found in the rational part of the soul” (pp. 139–140). This is clearly distinct from what psychoanalysts and especially cognitivists made of wishes and wish-makers. It is because wishes are desires which the person identifies that they reflect, at least in part, the kind of person he or she would like to be. In this way, for Aristotle, wish-making is a form of action that involves the ethical as it directs us to possible futures we construct as good.

A direct link to possibility was also made by Miceli and Castelfranchi (2010) in their discussion of hope and wish. For the two authors, hope includes a “belief of possibility about an event p , together with a goal or wish that p occurs”

(p. 255); in other words, wishes are an integral part of hoping and, in some ways, reduced to an expectation. As we have discussed before, however, wishes are much more than goals – they are orientations towards the future that is, at once, open and imagined as hospitable or favorable. Hope and wish can co-occur in building this kind of imagination, but they can also remain separate. Miceli and Castelfranchi interestingly brought in the notion of uncertainty to qualify hope, uncertainty both about the positive outcome and one's self-efficacy in bringing it about. The fact that imagined futures are never fully under our control has a big part to play in wish-making as well, where uncertainty might in fact increase rather than decrease the intensity of one's wish. This is not “illogical” wishful thinking, but a fundamentally human act of dwelling within the future and the possible. “As soon as some wish arises in our mind, the sea of possibilities comes to the forefront, together with a sea of consequent hopes” (p. 259).

In the end, it is important to note as well that, according to the sociocultural approach, society and its institutions also play a determining role in what we wish and hope for. From an early age, fairy tales shape our imagination of what is possible, allowed, and what kind of wishes can find fulfilment (Rikxin and White 1913). Play and games further specify the universe of what is possible to think about and to wish for. The “sea of possibilities” mentioned just above is for some people and in some circumstances, extremely narrow, even inexistent. And yet, the possibility of wishing things to be different is always present. Even when we don't exactly have the means and resources to fully understand what this different future might involve, we can still wish for change. This is the “hidden” energy behind most social movements and forms of activism, and it is also a valuable source of transformation for the self, within everyday life. Wishes might not always come true but the act of wishing, in and of itself, reflects the power to envision the world differently than it is. And this capacity is essential for our existence as agentic, social, and ethical beings.

Cross-References

- [Counterfactual Thinking](#)
- [Emotion](#)
- [Hope](#)
- [Imagination](#)
- [Possible in Psychology](#)
- [Uncertainty](#)

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Wishful Thinking

► [Wish](#)

Wonder

Vlad P. Glăveanu

School of Psychology, Dublin City University,
Dublin, Ireland

Centre for the Science of Learning and
Technology, University of Bergen, Bergen,
Norway

Abstract

Wonder is a mundane experience and, at the same time, a transformational state of mind in which we more or less suddenly become aware of an expanded field of possibility and start exploring it without the expectation of reaching a particular outcome or understanding. Wondering helps us dwell into the unknown as a goal in and of itself. This entry starts from a brief history of thinking about wonder before moving on to a conceptual model of it and, finally, reflecting on the practical implications of wondering in education, work, and in society. The history of this phenomenon brings to the fore our changing relationship, through the centuries, with emotions, knowledge, and certainty. The theoretical framework proposed connects wonder to the possible and postulates the inter-related processes of being aware of, excited about, and exploring new possibilities. In this way, wonder includes both a passive, receptive, and an active or dynamic dimension balancing wondering at and wondering about. Final reflections are offered on the importance of wonder for the person and for society.

Keywords

Wonder · Creativity · Imagination · Awareness of the possible · Excitement about the possible · Exploration of the possible · Education · Work · Society

Wondering is a mundane type of experience. Children wonder about why adults behave the way they do and what might be expected of them. Students ask themselves questions about an astonishing fact they learnt at school. Managers reflect on what the future might hold for their workers and for the company. Politicians ponder the meaning of the latest polls. Scientists are surprised by a particular finding and what it says about current theories. Historians are excited to discover a document that sheds a completely new light on ages we thought we know all about. Young people wonder why grownups are not doing more for the climate when so many communities suffer around the globe. For millennia, priests and other religious figures pray to understand the will of God and its mysterious ways. From antiquity until today, we all look up the night sky and marvel at the stars, looking for an answer to life's big questions: Why are we here?, What is the meaning of our existence?, and What exactly happens when it ends?

All the examples above illustrate moments of wonder or, rather, events, questions, and contexts that can trigger wondering. This does not mean we always get to wonder about the behavior of other people, the future, our planet, or the meaning of life. Not every question we raise or ask ourselves comes out of a place of wonder and not all reflection is synonymous with being in this state (for an interesting distinction between the two, see Gasché 2006). This is where everyday language can be misleading. We commonly say that we “wonder” when we simply “think” about things. The commonality between thinking and wondering has to do with the fact that, in both cases, we strive to know or to understand something. But while thinking, driven by curiosity, looks for an answer, wondering paradoxically does not. Or, rather, it opens us up to multiple answers and, above all, the possibility that none of them are correct, that there is much more that we still do not understand and we should continue to think about.

In this sense, wonder is both mundane in terms of the things that can prompt it and rare in terms of the specific processes that differentiate it from curiosity, contemplation, or pondering about

things. This entry will start with a brief history of our conceptions of wonder and our waxing and waning interest in it (for other accounts of this history, see Daston and Park 1998; Llyod 2018). Then it will briefly outline a conceptual model of wonder by identifying what is specific for this phenomenon vis a vis related experiences and examining three interrelated processes that make up wonder. Importantly for this encyclopedia, this conceptualization of wondering relates it to the possible and depicts it as one of the main ways of becoming aware of an expanded field of possibility and exploring it without the need for immediate closure or for finding the one, correct answer. When we wonder, we experience not knowing not as a precursor to knowledge, but as a generative state in its own right. And what this generates, first and foremost, is a sense of the possible.

A Potted History

Both the experience of wonder and our need to make sense of it are arguably as old as our species. From the moment our ancestors could use signs and tools to take some distance from the here and now of their existence and became able, with the help of cultural means, to reflect on this existence, wondering was not far behind. In fact, given the close relation between wonder and the experience of not knowing, we can hypothesize that wondering came before epistemic certainty. Prehistoric people must have marveled at nature and tried to understand its workings. As they did, their curiosity was kindled and then satisfied, leaving room for more curiosity to emerge. But some questions could never be fully answered, and they continued to fascinate, startle, and even frighten us. The first evidence of wondering comes, of course, from antiquity when recorded history gives us a clearer glimpse into the minds of our ancestors. Ancient Greeks, for example, knew how to appreciate this strange state of mind that seeks knowledge without ever being fully content with it. Socrates made this experience the cornerstone of gaining wisdom about self, others, and world. Philosophy is born

out of wonder – a remark that echoed through the ages (Plato 1903).

But wonder and wondering have not always been revered. On the contrary, seventeenth-century philosophers seriously doubted the value of these phenomena. Considering wonder an emotion, Descartes (1989) feared that it can easily cloud judgement. As the “first passion,” admiration opens us up to the world, but it can also confuse us, especially if it is not guided by reason. Too much wondering can make the wondered perplexed and unable to think or act. This is an old theme that, once more, takes us back to Socrates and to his death. Socrates had famously been condemned by Athenians to death by poisoning for the crime of corrupting the mind of the young. This meant that, instead of dealing with the practicalities of life and being active and decisive citizens, young people following Socrates indulged in meditating about life and, most of all, came with more questions out of it rather than answers. Socrates’ crime was, thus, cultivating wonder. Descartes was not keen on understanding what we do not know and might never know; he famously wanted to know what knowledge he could trust. *Cogito ergo sum* – I think therefore I am – leaves little place for further doubt, at least about this basic principle.

Fast forward to the twentieth century and we are witnessing a rediscovery of wonder in the work of Martin Heidegger (1994). Heidegger was inspired by ancient Greeks and, key among them, Socrates, when he revalued wondering as the mission of any philosopher. Dwelling into the unknown is once more seen as a worthwhile experience and not the opposite of reason or action. In order to grasp the world at a phenomenological level, we have to doubt all our assumptions and relinquish the taken for granted. And Heidegger did produce philosophical work that is still appreciated today because of its wonder-triggering qualities. But his legacy was also made problematic by the fact that, while wondering about experience in general, he failed to take note of or react to the horrors of the Nazi regime. Was this wonderment, as the ancient judges of Socrates would say, disconnecting him from the world? Was it clouding his reason, Descartes would ask?

Hannah Arendt (1978) reflected precisely on this kind of questions and came to a different conclusion – the true value of wonder is to make us better, more aware and more critically engaged citizens. When we wonder we question, and this is what totalitarian regimes across history fear the most.

The history of wondering about wonder is thus one of controversy and of moving between dichotomies: knowing and not knowing, emotion and reason, action and nonaction, as well as certainty and the unknown. Predictably, the appreciation of wonder grew in those ages in which certainties were actively questioned and a more comprehensive view of reason, in its relation to emotion, prevailed. What about today?

Twenty-first-century accounts of wonder are characterized by an attempt to use scientific methods to examine the exact nature of this experience. Neuroscience studies of wonder, as well as awe, are often complemented by a more phenomenological approach, closer to the one adopted by Heidegger himself (for an example, see Gallagher et al. 2015). At the same time, there is a growing interest in wonder from a social science and humanities perspective. My own concern for this phenomenon stems from the study of creativity and, more recently, of human possibility. If wonder is the generative state thinkers like Socrates believed it was, then there is a creative element associated with it, at least in what the creation of new meaning is concerned (Glăveanu 2017a). Moreover, going back to the old roots of thinking about wonder in antiquity implies grasping the immense openness associated with questioning the obvious and making the familiar unfamiliar. This last process in particular implies the ability to see the world from new perspectives, a process that effectively transforms one’s reality and opens up the possible in human existence. Understanding how and why this is the case requires further theoretical elaboration.

A Theoretical Model

Despite centuries of interest in wondering, there are relatively few theoretical models of what this

phenomenon actually entails (for a philosophical exploration, see Parsons 1969) and even less empirical research (Carlsen and Sandelands 2014). This might well be because wonder is often considered in singular terms like “not knowing” or “dwelling into the unknown.” Yet what exactly triggers wondering, what are its processes, and how, if ever, could we cultivate it?

Before addressing these big questions, it is important to reflect for a moment on those phenomena that are similar to wonder and yet distinct from it, in particular curiosity and awe. The biggest commonality among them lies in the fact that they both connect us, one way or another, to an expanded field of possibility and drive us toward new knowledge about others, ourselves, and the world. At a practical level, all these processes involve raising questions and experiencing surprise. In other words, they either activate us and support our exploration or make us more sensitive and receptive to what lays in front of us. This active-passive dichotomy is important for understanding wonder, curiosity, and awe and what might differentiate between them.

Curiosity is an intrinsically activating state. To be curious means to be on the lookout for answers, to try things out and see what happens, to observe carefully (Engel 2015). Unsurprisingly then, curiosity ends (or is satisfied, as we typically say) when we get the knowledge we are looking for, i.e., when we understand. In other words, curiosity is triggered by a certain disturbance or unexpected event and ends in making us passive (again) or feeling satisfied. As such, it starts from the unfamiliar and it makes it familiar for us to be able to live with it undisturbed.

Awe does almost the opposite. Instead of activating, the unfamiliar unsettles us at such a deep level that it makes the person passive, unable to move (that is why the state of awe is often described as taking one’s breath away). We are in awe when we witness magnificent, overpowering, transcendental scenes or events. Scenes and events that might even terrify us. In fact, the sublime was how eighteenth-century philosophers (Burke 1958) referred to being in awe, a special state of mind that combines a sense of the beautiful and the terrible. The rising sun over the

planet Earth, seen from space, or a volcano eruption, admired from afar, can make us experience the sublime. We can note here a condition for this experience: We must feel safe from the terror of the scene before us and free to appreciate its aesthetic, transcendental dimensions.

Where does this leave wonder? On the continuum between passive awe and active curiosity, wonder sits in the middle, balancing surprise and receptivity with engagement and exploration (for a similar view, see Kareem 2014). Which is not to say that wonder is simply of combination of awe and curiosity, but that it shares characteristics with both. The intensity of feeling might be lower in wonder than awe, but wondering does make us marvel at the world. Conversely, we raise questions when we wonder, yet these do not aim to make the unfamiliar familiar, like in curiosity, but make the familiar unfamiliar. In wonder we question what we think we know and not only what we already know we do not know. In the end, the defining feature of wonder is that it helps us see the world anew by problematizing existing knowledge and opening us up to a field of possibility. As soon as we decide for one option within this field, we stop wondering. Thus, what wonder does is maintain us in a state of openness and uncertainty that is both tense and enchanting. It helps us explore what we do not understand without the promise of knowledge. In this, it is a state of mind unlike any other.

How exactly we can analytically describe the experience of wondering is, therefore, an important question. There are a few phenomenological studies of wonder (e.g., Parsons 1969) that usefully describe the thoughts and emotions involved in this phenomenon. However, we are yet to develop an account that is both analytical in its approach, distinguishing between different facets and processes, and holistic in its understanding of wondering as a unitary experience. I recently attempted to elaborate such a theoretical model (see Glăveanu 2020) which is summarized briefly as follows.

As noted above, wonder is unique in its integration of two dimensions: the receptivity of being surprised by a thought, object, or event, and the active exploration of it. This distinction is well noted in the literature, where scholars refer to

these “stages” in terms of wondering at and wondering about, respectively. Importantly, these two facets are interrelated at a deeper level than simply following or supporting each other. Just wondering at or wondering about results in a partial experience, one that we might not even call wonder anymore (but, as we have seen, place it closer to either awe or curiosity). So, what is it that “holds” the experience of wonder together?

To answer this last question we need to return to the idea that wondering relates as much to knowledge as it does to the possible. While centuries of thinking about wonder grounded it firmly in the discourse of knowing, not knowing, and getting to know, they also constructed this phenomenon in oppositional terms: active or passive, cognitive or emotional, useful or troublesome, and so on. In order to transcend these dichotomies, it useful to remember that the possible is both a trigger and outcome of wondering. It is by getting the sense of an expanded sense of possibility, for thinking and/or action, that we are prompted to wonder and, equally, the act of wondering explores and oftentimes expands this field of possibility.

In many ways, thus, wondering at can be conceptualized as becoming aware of the possible and, at the same time, exploring the possible. What unites these two is excitement about the possible or the emotional reaction that accompanies the realization that there is more to reality than we perceive or that we previously thought there would be (for details, see Glăveanu 2020). The dynamic relation between these three “elements” is captured in Fig. 1 below:

What is crucial to remember here is that the processes from Fig. 1 are not separate and do not operate independently of each other. The experience of wonder is a unitary experience, even if, at

different moments in time, it can be dominated by one of another of its facets. For example, encountering an unexpected object or getting to see a familiar object in a completely new light is likely to make us aware of an expanded field of possibility. But this awareness would be lost if we, almost at the same time, would not feel excited or motivated to pursue this insight and consider what else is there and what might come out of it.

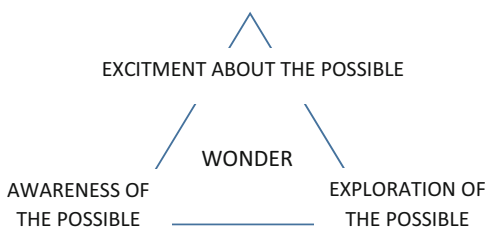
Awareness, excitement, and exploration are intimately related within wondering and it is precisely this relationship that matters when considering the practical implications of how, when, and why we wonder.

Practical Implications

Why do we need the experience of wonder in our lives? After all, maybe the enemies of Socrates had a point when they said that wondering at best wastes our time and, at worst, makes us detached from reality and cynical toward any kind of established knowledge. As such, before addressing the practical implications of this phenomenon, a few observations are needed.

First of all, wondering – together with curiosity and creative expression – has a crucial part to play in our development and well-being (Nussbaum 2001; Chouinard 2007; Fuller 2009). In wonder, we take some distance from how things appear to be and think deeply about them. In order to be able to do this, we need to feel safe and to trust that we can take risks and really think freely. All of these are key preconditions for a healthy development. Second, wonder does not make us more cynical but, if anything, more open to the experience of other people. Socrates was not mocking his disciples for trying to know things but accompanying them through this process with a sense of openness and authentic interest in the other. These qualities do not make us less engaged in society but more willing to listen, to learn, and to act.

The conceptual model I outlined in this entry, including the awareness of, excitement for, and exploration of the possible, has some concrete benefits. Without it, we would not be able, for instance, to identify and to cultivate an experience



Wonder, Fig. 1 A conceptual model of wonder

of wonder that is “complete” rather than partial. An experience that leads us to the benefits mentioned above instead of reducing them to distractions and unenthusiastic forms of exploration.

Taking the example of education, teachers might be tempted in the classroom to use all sorts of surprising facts (including stories and videos) that make students think and question what they thought they knew. This falls under developing a sense of the possible or the process referred to as “wondering at,” the one that helps students connect on a personal level with the topic at hand. But does it help them make new meaning out of it and use this meaning to remain open to their unfolding experience? Not unless they are given the tools to properly explore the reason for their surprise, in other words, the tools to explore the possible and to “wonder about” it. These tools can be material, for instance a useful embodied exercise, or symbolic, in the form of a handout or a set of instructions. Meanwhile, bringing together wondering at and about, students need to remain motivated to explore, able to discover new surprises, and be excited about the possibilities associated with them. In this way, awareness, excitement, and exploration “collaborate” in creating an experience of wonder that is wide ranging, generative, and able to lead to deeper-level transformation (for a call for teaching that fuels curiosity, wonder, and imagination, see Engel 2011).

Wonder matters in education because students tend to experience too little of it at school. This is especially concerning given that classrooms should be precisely places where wonder – the experience of not knowing and wanting to understand – should thrive. Unfortunately, teachers often leave little space for wondering in actual classrooms because they almost immediately want to replace the experience of not knowing in their students with that of knowing. More than this, their aim is to have students know the “right,” oftentimes single answer. Despite an almost natural association between the aims of education and the outcomes of wonder, teachers are more often than not inclined to eliminate uncertainty and doubt from the classroom rather than foster it (with some exceptions, of course, see Beghetto 2018). It is therefore all the more important to become aware

of the fact that hindering wonder in educational processes means disconnecting students from a fruitful relation to what is possible and effectively impeding their exploration of new possibilities.

The same largely applies to work in organizations. Here, unlike schools, wondering and its companions – uncertainty and doubt – are often deliberately suppressed. A leader who wonders “too much” might well lose track of what is happening in the organization. A worker who does the same risks becoming aware of too many new possibilities and walking away or not doing the job properly. Organizations, by and large, aim for stability and productivity rather than support creativity and wonder (Lahlou and Beaudouin 2016). This is, at least, what we usually believe, but doesn’t this state of affairs apply more to twentieth-century firms and industries? Today we are repeatedly told that organizations need to be smart, agile, and ready to embrace change if they are to survive and grow. The characteristics above require a wondering mind. They ask for leaders and employees who are able to step back from the here and now of the situation they are in and question it, to imagine alternatives and build different futures. There is, therefore, a strong argument to be made that the processes of wonder we should try to cultivate in the classroom are highly relevant for the workplace as well.

And also beyond work, wonder is fundamental for living in society together with others and as an engine of social change. The past decades have seen an increase in protests and revolutions worldwide, few of them successful, many of them ineffective in the short and medium term at least. And yet, people find highly original ways to collectively express their call for a different society. New forms of activism and artivism emerge every day, animated by a shared desire to imagine the world different than how it is (see also Harrebye 2016). This constant questioning of convention and of the taken for granted is paired with a renewed sense of freedom and possibility: the fundamental characteristics of wondering. Previously, I wrote about the notion of “collective wonder” in social movements (Glăveanu 2017b), by which I do not imply that the collective itself wonders – individuals wonder, but their

experience is deeply social, shared with others, and in touch with the hopes and dreams of people close and far, even people they never got to meet personally. The value of wonder in society, as Socrates knew very well, is to unsettle the status quo and unleash the power of the imagination. In a world plagued by a variety of crises – from environmental to economic, social, and political – it is our capacity to wonder, separately and together, that helps us delve into the possible and experience the world as it yet might be.

Conclusion

I have argued in this entry that wonder is a fundamental type of human experience. What makes it eminently human (although we should be open to the possibility that some animals are able to entertain basic forms of wondering) is the fact that it opens up the possible in our existence. There are many phenomena, many of them covered in these pages, that relate to possibility and enable it. The particular role of wonder is to give us one of the most direct experiences of the possible. It is a peculiar experience in that it does not aim toward a certain outcome but embodies the openness, freedom, uncertainty, excitement, and uneasiness with which we usually approach the possible in our lives. Wondering has a variety of outcomes. It accompanies learning, it enriches our personal and working life, and it helps communities come together in an effort of reimagining the social world. But these outcomes come about when we feel safe enough to explore possibilities, to make mistakes, and when we accept that not knowing is a productive state of mind. Embracing these premises, however, requires us to overcome society's obsession with certainty, efficiency, and self-assured knowledge. That was no easy task in Socrates' time, and it certainly is not made any easier today.

Cross-References

- [Awe](#)
- [Creativity](#)
- [Curiosity](#)

- [Emotion](#)
- [Imagination](#)
- [Open-Mindedness](#)
- [Pedagogies of the Possible](#)
- [Social Change](#)
- [Sublime](#)
- [Uncertainty](#)

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Z

Zone of Proximal Development

Ingunn Johanne Ness

Faculty of Psychology, Centre for the Science of Learning and Technology (SLATE), University of Bergen, Bergen, Norway

Abstract

The zone of proximal development (ZPD) is a concept mostly associated with Lev Vygotsky, a Russian psychologist. The concept is primarily concerned with social and participatory learning and refers to the space between what a child can do on his or her own and what the child can do with help from someone more capable. However, the ZPD is about more than passive scaffolding from the more capable other. Instead it is closely connected to the idea of expanding the possible, using one's imagination, and pushing boundaries for what is known. This entry starts with defining the ZPD, and then the central part of the entry outlines the zone's core principles and elaborates how the ZPD involves creativity, play, and emotions. Positive emotions make it easier to play with ideas and what is possible thinking. Play is a source for development, and Vygotsky's ideas on creativity, play, and imagination can inspire how teachers teach. When children listen to the teacher or to each other's

experiences, they will be able to think in new ways, and the possible is broadened.

Keywords

Creativity · Zone of proximal development · Vygotsky · Play · Emotions · Dialogism · Experience · Imagination · Sociocultural psychology

The zone of proximal development is a well-known concept associated with the Russian psychologist Lev Vygotsky. It has been regularly interpreted and reinterpreted over the years, and while the bulk of the research and theorizing has taken place in educational contexts and learning situations, the zone of proximal development (ZPD) holds a special interest for both developmental and cognitive psychologists. Hence Vygotsky's ideas have been included in studies in a variety of fields – from intelligence testing (Brown and Ferrara 1985; Campione et al. 1984) to memory (Rogoff and Gardner 1984) and problem-solving (Wertsch 1979).

Even though it seems to be publicly accepted that it was Vygotsky that originally articulated the concept of ZPD, he states that it came from American and German authors. While many of Vygotsky's sources which formed his inspiration have been discovered and while he was clearly indebted to the work of his contemporaries, as noted by van der Veer and Valsiner (1991,

pp. 347–348), it has so far not been possible to find proof that his theory actually was formulated by others (van der Veer and Valsiner 1991, p. 347). His thinking was original, and it seems likely that it is a good example of Vygotsky's own creative synthesizing (Hasse 2001).

This entry will start with defining the ZPD and explore how the concept is connected to creativity, play, and emotions. Vygotsky's ideas on creativity, play, and imagination can inspire how teachers teach. The ZPD emphasizes the child's independent performance, but at the same time it focuses on how cognitive processes are stimulated and developing through imagination and play in a supportive environment. When these conditions are present, there will be a widening of the possible by pushing the boundaries for what is known to the child.

Defining the ZPD

As a concept, the ZPD is primarily concerned with social and participatory learning. Perhaps the most common definition is that it refers to the space between what a child can do on his or her own and what the child can do with help from someone more capable: "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky 1978, p. 86). The central tenet of the theory is that when someone faces a task or a problem, the person can perform better with mediated assistance. This assistance can come from any person who has a better understanding, more experience, or a higher ability level than the learner, with respect to a particular task or process: "the more knowledgeable other." Even though this more knowledgeable other is often the teacher or an adult, it can be any person, older or younger, as long as he or she has more knowledge.

The zone of proximal development has many characteristics and is thus defined in many ways. According to Lobman (2010, pp. 202–203), several characterizations of the ZPD actually also

exist in Vygotsky's own writing (Holzman 2009; Newman and Holzman 1993). Still, the ZPD has mostly been defined as an instructional tool through which a more developed adult or peer provides just enough support for a less developed child to do something they could not do independently (Bodrova and Leong 1996; Rogoff and Gardner 1984; Wood et al. 1976).

However, Lobman points to Newman and Holzman (1993), who move beyond an instrumental definition of ZPD and perceive the ZPD as a creative, improvisational activity of people creating environments where there is room for both children and adults to take risks and make mistakes, at the same time as they support each other to perform tasks that they are not yet able to master on their own. Consequently, the ZPD is an ever-changing distance between being and becoming, rather than being a tool for learning pieces of information. In this way, the ZPD is not a concrete technique but instead an activity in which people can collectively engage and develop. Lobman (2010) states that such a view of the ZPD then shifts from putting focus on learning *in* the ZPD toward the active creation *of* the ZPD. According to this perspective, the zone of proximal development, as seen by Vygotsky, is indeed socially and actively created and can be seen as a process and not an entity – which again provides a way to understand human development that puts creativity at center stage with a focus on the possible and how learning is stimulated and cognitive processes develop.

Scaffolding

Closely connected to ZPD is the concept of "scaffolding" which was first developed by Wood et al. (1976). The metaphor is closely connected to the building industry and based on Vygotsky's concepts of learning and development. Children will need support, a scaffold, in different learning situations, and scaffolding encompasses both modelling and imitation to help the child to solve a task beyond what the child can do on its own (Wood et al. 1976, p. 90). The more the child learns, the tasks in which he or she can be engaged

in become more difficult – and in this way the zone is always changing. Scaffolding supports the child to develop and learn more.

In later years, however, there have been ongoing discussions about the ZPD and especially how knowledge is developed between people through interpersonal scaffolding (John-Steiner and Mahn 1996; Wells 1999). As outlined above, the majority of the research literature describes scaffolding as a process that enables a child or a novice to solve a problem, carry out a task, or achieve a goal that would be beyond the person's unassisted efforts (Wood et al. 1976). In this way, the term scaffolding could be taken to infer a process going one way where the “scaffolder” constructs the scaffold alone and presents it for the use to the novice (Daniels 2008). On the other hand, Newman et al. (1989) suggest a more relational approach: that the ZPD is created through a negotiation between the learner and the more advance partner, rather than through the donation of a scaffold as some kind of prefabricated climbing frame. In this way, both the learner and the more capable other will develop.

Griffin and Cole (1984) therefore criticize the scaffolding metaphor and claim that different settings and activities give rise to spaces within the ZPD which involve creative exploration rather than pedagogic domination (Daniels 2008). Valuing that space is at the heart of Griffin and Cole (1984) position; they argue for a dialogical interpretation of what Wertsch would term “mediated action” within a zone of proximal development in which the learner always brings a creative response to instruction or information given (Daniels 2008, p. 68). On deeper consideration, we find that there are various forms of mediation that affect progress within a ZPD (e.g., Daniels 2007; Smagorinsky 2008; Thompson 2012a, b). For instance, we can see it in peer collaboration involving critical thinking, problem-solving, or making decisions and scaffolding of a task.

Creativity and ZPD

There are parallels between Vygotsky's view on creativity and his theory on ZPD. The theory on

ZPD emphasizes the child's independent performance but also draws attention to the way in which the cognitive processes are immature and in the process of developing. According to Vygotsky, creative processes also involve the ability to think in concepts (Smolucha and Smolucha 1986) – which is an ability that first and foremost develops during adolescence and then matures in adulthood. In both artistic and scientific contexts, creativity will require an interplay between imagination and conceptual thinking. This will continue to develop throughout the life span (John-Steiner et al. 2010).

According to Vygotsky, imagination is the basis for all creative activity and is involved in every aspect connected to creation: “imagination, as the basis of all creative activity, is an important component of absolutely all aspects of cultural life, enabling artistic, scientific, and technical creation alike” (Vygotsky 1930/2004, p. 9). Vygotsky (1930/2004) claimed that creativity exists wherever the human imagination combines, changes, and creates something new. Vygotsky (1930/2004) described fantasy and creativity as any human action that results in something new – even if this is only known to that individual person. This is an everyday view on creativity as something that does not have to result in a big innovation. While for Vygotsky creativity was something every day that didn't have to result in big historical work, at the same time he acknowledged that such breakthroughs were possible. Vygotsky believed that those higher forms of creativity are not within everyone's reach for everybody but still that these big innovations are built on similar creative processes as in the minor discoveries:

Of course, the highest expressions of creativity remain accessible only to a select few human geniuses; however, in the everyday life that surrounds us, creativity is an essential condition for existence and all that goes beyond the rut of routine and involves innovation, albeit only a tiny amount, owes its existence to the human creative process. (Vygotsky 1930/2004, pp. 10–11)

These concepts – imagination, creativity, and fantasy – are used interchangeably throughout Vygotsky's work, along with the term “creative

imagination.” He was strongly influenced by Ribot (1906/2010) who presented the first holistic psychological theories on creative imagination: recombination theory. Ribot’s focus was, in particular, on how imagination can be seen as a continuum from reproduction to production as in creating something new. Vygotsky thought it was important to divide between what already exists and what is new. According to Vygotsky, either people will reproduce activities (that do not lead to something new and will thus be linked to memory) or people can engage in more innovative and creative activities like perhaps combining elements from previous experience so that these result in new combinations (which then will be linked to imagination and not memory). The latter is what Vygotsky defined as creative imagination. Our fantasy and our imagination are dependent on previous experiences in order to create new combinations (Vygotsky 1930/2004):

... imagination takes on a very important function in human behaviour and human development. It becomes the means by which a person’s experience is broadened, because he can imagine what he has not seen, can conceptualize something from another person’s narration and description of what he himself has never directly experienced... (Vygotsky 1930/2004, p. 17).

In other words, how creative a person can be will depend on how many different experiences the person has – but it is not necessary to experience everything directly oneself; it is enough to listen to other people’s descriptions.

Play and ZPD

Vygotsky claimed that creative processes are involved already in early childhood and points to how play is a way for the child to be creative by – among other things – taking on different roles. The child will use the experiences she or he has gotten so far in life as a point of departure for further elaboration. In this there is a social aspect, and it is through imagination children learn how to act in human relations, activities, and situations. When going through these processes with playful exploration, the children develop and grow

(Marjanovic-Shane 2010). Vygotsky saw imagination as an internalized play that developed in interaction with others (Moran and John-Steiner 2003).

According to Holzman (2010), Vygotsky claimed that play has an essential role in early childhood development and stated that: “In play a child always behaves beyond his average age, above his daily behaviour; in play it is as though he were a head taller than himself” (Vygotsky 1978, p. 102). Here we see a clear connection to development which has gone on to influence researchers in education all over the world. Play is a source for development, and Vygotsky’s ideas on creativity, play, and imagination can inspire how teachers teach. When children listen to the teacher or to each other’s experiences, they will be able to use their imagination and think in new ways. Put in another way: the possible is broadened. This process in which they combine previous knowledge with new experiences results in a change in the children’s individual knowledge. In this way, change is a link between creativity and learning (Glaveanu et al. 2019). A way to share experiences in, for instance, the classroom is to let the pupils bring an item from home that means something special for them. This can be a toy, a dress, or even a play, and then let them tell and share to each other what makes this special item so special. This can help the pupils to feel “seen” and safe, and it is also a fun way to learn. Positive emotions stimulate imagination and enhance learning.

Emotions and ZPD

Vygotsky’s ideas on emotions are perhaps not very well known, but they are fundamental to an understanding of his theory on the human mind and the zone of proximal development. His concept of ZPD can be understood in more depth by looking at how Vygotsky’s thought on emotions influences learning:

Thought is not born of other thoughts. Thought has its origins in the motivating sphere of consciousness, a sphere that includes our inclinations and needs, our interests and impulses, and our affect

and emotions. The affective and volitional tendency stands behind thought. Only here do we find the answer to the final “why” in the analysis of thinking. (Vygotsky 1934/1987, p. 282)

Here Vygotsky explores the relationship between thoughts, emotions, language, and consciousness. By including emotional variables when studying ZPD, we will also see how children’s experiences and emotions influence both this zone and their learning and development.

For instance, if pupils in school feel that the gap between what they can do on their own and what the teacher expects them to master is too wide, they can become worried – and that will hinder their learning. If they become afraid of failing, this can hinder their creativity and openness for learning (Mahn and John-Steiner 2002).

Emotions and supportive relations are according to Vygotsky crucial for children’s learning and will help children to use their imagination. Research on creativity and emotions in a socio-cultural perspective show that when people feel safe in a situation, we relax and go into a “broaden-and-build mode” (Fredrickson and Branigan 2005). This will make it easier to play with ideas and to engage in creative scenario thinking. According to Marjanovic-Shane, Connery, and John-Steiner (2010, p. 224), emotions are intertwined in learning and teaching and exist as important dimensions in the quality of all learning and teaching situations. Marjanovic-Shane et al. (2010, p. 225) claims that the way learning environments are organized will either foster or hinder the emotional and relational conditions for creative activities. Learning is a creative act. Positive relations will encourage children to “let go” and to get engaged in learning and in other creative processes. Emotional support that follows positive relations and respect is an important condition for creativity and learning. Emotional support can create emotional safety which is crucial to learning. Mahn and John-Steiner (2002, pp. 5–6) claim that “the Gift of Confidence” is reciprocal emotional support that can help anyone that is in the beginning of their learning of something (language, maths, or something else). Self-confidence comes from support and is an important part of the ZPD and the creative

processes that we associate with Vygotsky. Positive emotions make it easier to play with ideas and what is possible thinking.

Summary & Conclusion

The zone of proximal development has many aspects and is about more than passive scaffolding from the more capable other. Vygotsky’s ideas on the ZPD and how this involves creativity, play, and imagination can inspire how teachers teach. This entry started by defining the ZPD, and then it has explored in more detail how the concept is connected to creativity, play, and emotions. The ZPD emphasizes the child’s independent performance, but at the same time, it focuses on how cognitive processes are stimulated and developing through imagination and play in a supportive environment. If the child becomes afraid of failing, this can hinder creativity and openness for learning. On the other hand, when these conditions are present and the child is supported and encouraged in play, this will stimulate imagination and creativity. In this way, there will be a widening of the possible and what the child can learn by pushing the boundaries for what is known to the child.

Cross-References

► [Dialogism](#)

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